ON

ATROPHY OF THE STOMACH

AND ON THE

NERVOUS AFFECTIONS OF THE DIGESTIVE ORGANS

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OUTLINES OF MEDICAL TREATMENT

ON

ATROPHY OF THE STOMACH

AND ON THE

NERVOUS AFFECTIONS OF THE DIGESTIVE ORGANS

BY

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TO

SIR JAMES PAGET, Bart., F.R.C.S., D.C.L., LL.D., F.R.S.

SERJEANT-SURGEON TO HER MAJESTY THE QUEEN
SURGEON TO HIS ROYAL HIGHNESS THE PRINCE OF WALES; AND
CONSULTING SURGEON TO ST BARTHOLOMEW'S HOSPITAL

IN ADMIRATION

OF HIS PATHOLOGICAL LABOURS

This Attempt

TO ELUCIDATE THE PATHOLOGY OF

SOME OBSCURE AFFECTIONS OF THE DIGESTIVE ORGANS

IS DEDICATED

PREFACE

THERE are few diseases that have of late years attracted more notice than pernicious anæmia. Its rare occurrence, the absence of symptoms pointing to disease of any organ in particular, the negative results of post-mortem inquiries, and its steady progress towards a fatal termination, have tended to invest it with an unusual amount of interest. Clinical observers have recorded most minutely the symptoms during life, and pathologists have searched the various organs after death, in the hope of obtaining a clue to the cause of this malady, but hitherto without avail. It seems, however, not to have been sufficiently borne in mind that the anæmia that so rivets the attention of the practitioner is only a symptom, and may arise from an imperfect performance of the functions of any of the organs engaged in the formation of the blood. I have shown in Chapter II that general atrophy of the gastric glands is accompanied by intense anæmia, and that, therefore, some of the cases of this disease must be

referred to it. But as this explanation cannot be applied to all the instances of pernicious anæmia that come beneath our notice I have suggested that some may be due to other morbid conditions of the digestive canal, more especially to chronic tubular gastritis, a morbid change that is analogous to the smooth white kidney in chronic Bright's disease.

I perhaps ought to apologise for introducing the speculations concerning cancer in Chapter IV into a work of a practical character, but they seemed to arise naturally out of the subject under discussion. Modern inquirers appear to me to have erred in regarding malignant tumours so entirely from a microscopical point of view, for it concerns us rather to know *why* than *how* a morbid structure grows, and no amount of investigation into the size and shape of the cells of which it is composed is likely to afford us this information. After a considerable expenditure of time and labour, and having examined with the microscope the digestive canal in about eighty persons who had died of cancer, I was obliged to abandon the hope of discovering the indirect cause of the local disease in an alteration of the digestive process.

It is difficult to frame a hypothesis that will in any degree explain the occurrence of malignant tumours, and yet some supposition is requisite to afford a definite direction for future inquiries. The following

seems to me the most probable:—We know that even in the simplest forms of life a growth not included in the original plan of the organism may be produced by local irritation; for example, the ordinary oak apple is a vegetable tumour attended with a chemical change in its material, and is the result of the irritation excited by an insect. Now, I have found that there is in most cases of death from cancer degeneration, and, therefore, loss of the vital power, in organs at a distance from the malignant tumour, and it may be, therefore, supposed there is a similar loss of vital power in the diseased part itself. Normally the chemical changes that take place in the metamorphosis of the tissues result in the formation of materials of an unirritating nature, which are returned into the circulation through the lymphatics and veins. But it is not difficult to conceive that where the vital power that controls these chemical changes is enfeebled other substances may result that may act as irritants, and therefore excite new growths in the various structures with which they may come into contact.

The presence of cells in a malignant tumour I believe to be due to the power of repair that exists in every part of a living body, by which organisation is attempted in any material incapable of being broken up by fatty degeneration and of subsequent elimination. The shape of the cells, to which so much attention has been directed, I therefore suspect chiefly depends upon

the nature of the material of which they are formed. If, for instance, they originate in a highly contractile substance they become elongated by the traction exercised upon them during their growth, whereas they will remain round in tumours comprised of albumen, gelatin, or mucus. The size and shape of the cells is, in this point of view, a rough but very imperfect indication of the nature of the material in which they are developed.

In treating of the neuroses of the digestive canal the disorders that are more generally recognised have received only partial notice, whilst especial attention has been bestowed upon those that are less known or are more apt to lead to errors in practice. Thus, spasm and hysterial vomiting have been only slightly mentioned, whilst anorexia nervosa and neuralgia of the stomach and colon have been illustrated by several examples.

The cases I have attributed to eczema of the stomach have probably been remarked by other practitioners; they are interesting, not only on their own account, but as opening out an extensive field for future inquiries.

I have not seen any notice of malarial vomiting, and have drawn attention to it on account of the difficulty and importance of the subject. The effects of malarial poisoning have, I think, scarcely received the attention they deserve, for few hospital physicians will

doubt that the nervous system, kidneys, and digestive canal, are as liable to suffer from this cause as the liver and spleen.

Cases like those given in the last chapter will be explained differently by various practitioners according to the views they entertain as to the possibility of organic changes being the result of reflex nervous action. More careful investigation is much needed, and will, no doubt, lead to results of great interest and importance.

It gives me great pleasure to acknowledge my obligations to my son Dr Bedford Fenwick, for his supervision of this work while passing through the press.

29, Harley Street,
Cavendish Square;
July 17*th*, 1880.

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ATROPHY OF THE STOMACH

ATROPHY OF THE STOMACH

CHAPTER I

In many of the glandular organs of the body a condition is frequently met with, in which disease commences in the connective tissue uniting the secreting structures. In proportion as the affected tissue becomes thickened atrophy of the secreting cells takes place, so that eventually the whole organ is greatly reduced in bulk. In this way the "granular" or "contracting kidney" is produced, whilst an analogous state of the liver is recognised as "cirrhosis." It might reasonably be supposed that a similar anatomical change would be liable to occur in the secreting structures with which the stomach is so largely provided, more especially as it is endowed with greater functional activity than the kidneys or the liver, and is exposed to many sources of irritation from which they are exempt. To Dr Handfield Jones* belongs the merit of first demonstrating the frequency with which this occurs,

* 'Path. Soc. Trans.,' vols. iv and v; 'Medico-Chir. Trans.,' 1854; 'Diseases of Stomach,' 1855.

and his statements have been fully verified by Dr Habershon,* Dr Wilson Fox,† and by the author,‡ in this country, and by Rokitanski, Sappey,§ and other observers on the Continent.

Where death has taken place from atrophy of the stomach the organ is usually found to be empty, on account of the repugnance of the patient to take food. Consequently the mucous membrane rarely shows any signs of post-mortem solution. The appearances of disease, visible by the naked eye, are much less than the disorganisation revealed by the microscope would lead us to expect. In some cases the surface is unusually pale, in others the blood-vessels are congested, especially towards the cardiac orifice. Ordinarily the mucous membrane is reduced in thickness; indeed, in one case the wasting was so great that at first sight I was led to believe that the whole of the lining membrane had been removed by post-mortem solution. That such, however, was not the case was proved by the stomach being empty of food, and by the thinness being general, instead of being limited by a well-defined line, as is usually the case where softening has occurred after death. In most instances, if not in all, the membrane feels tough and firm, and is so

* 'Guy's Hosp. Rep.,' 3rd ser., ii, 1855; 'Observations on the Alimentary Canal,' 1857.

† "Contributions to the Pathology of the Glandular Structures of the Stomach," 'Med.-Chir. Trans.,' 1858.

‡ "Morbid Changes in the Stomach and Intestinal Villi in Persons dying of Cancer," 'Med.-Chir. Trans.,' 1865; 'On Diseases of the Stomach and Duodenum,' 1868.

§ 'Traité d'Anatomie Descriptive,' tome iv, p. 187.

adherent to the subjacent coats that it is difficult to dissect it from them.

When a stomach in this state is examined by the microscope in the early stage of the disease the secreting tubules are seen to be firmly united together, so that, when pressure is made upon the specimen, they do not move freely upon each other, as in the normal condition, whilst the spaces between and below them are occupied by an increased amount of connective tissue, or by newly-formed nuclei, cells, and fibres. They are commonly distended with a confused mass of cells and molecular matter, and their contents, more especially in the pyloric region, frequently project from their open ends, presenting the appearance of dark, granular villi. At a later stage, either the distinction between the tubules is entirely lost and lines of fatty cells alone remain to point out their original positions (see Fig. 7), or the mucous membrane presents a series of flask-shaped bodies loaded with cells, fatty and granular matters in the site of the bases of the tubules, the rest of the mucous membrane being reduced to a tissue in which no vestige of glandular structure can be recognised (see Figs. 4 and 6).

In the stomach, as in the case of the kidney, that portion of the glandular structure which is functionally most active seems to be especially obnoxious to disease, and to be, therefore, the first attacked. Thus, as in the latter organ the cortical part may be reduced to a thin layer, whilst the medullary portion remains tolerably healthy, so in like manner it is

common to discover the bases of the glands of the stomach completely atrophied and converted into the shape of flasks, or even entirely removed, when the upper parts of the tubes are not only open but increased in diameter. In both organs the presence of cysts is constantly remarked, although they are usually of small size in the gastric mucous membrane, on account of the looseness of the texture in which they are situated (see Figs. 1 and 4). In the kidney they seem to originate from distension of the tubes, and also from changes produced in the Malpighian bodies, but in the stomach they probably arise from an alteration in the tubules alone (see Fig. 1).

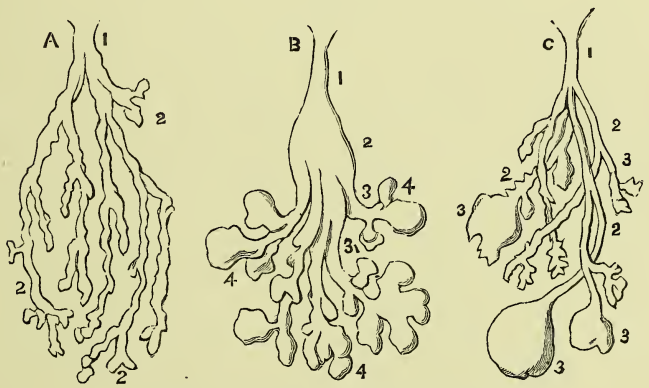
In atrophy of the gastric mucous membrane the solitary glands are usually found to be enlarged. In the earlier stages of the disease they form round or oval masses of small cells and nuclei surrounded by connective tissue. At a later period they often present the appearance of a cavity bounded by a thick layer of cells and nuclei, the secreting tubes being frequently pushed aside and atrophied by their pressure.

The morbid changes caused by atrophy of the stomach have been described by other observers in similar terms. Thus, Dr Wilson Fox remarks: "In this class may, therefore, be first mentioned those forms of simple atrophy of the mucous membrane of the stomach, associated with marked thinness and transparency of its walls, which have been mentioned by earlier and even by some modern writers with very little reference to their clinical significance, but which, as has been observed by the researches of Dr H.

Jones, Dr Habershon, Rokitanski, Dr Fenwick, and the author, are often combined with fatty degeneration and wasting of its tubular structures. These have been found in many instances to have been replaced by a greater or less amount of fibro-nucleated tissue."*

Sappey has given the three following representations of the various changes which he has found in the secreting glands of the stomach :

Fig. 1.



Gastric glands in a morbid state.

A. Atrophied pepsiniferous gland, not enclosing cells, but only a small quantity of fluid. 1. The trunk. 2, 2, 2. The divisions, the calibre of which is diminished and the outline very unequal.

B. Another pepsiniferous gland from the splenic region; the trunk, divisions and cul-de-sacs of which are, on the contrary, dilated. 1. The free extremity of the trunk which does not participate in the dilatation. 2. Its lower part distended into the form of a flask. 3, 3. The divisions but little dilated. 4, 4, 4. The terminal cul-de-sacs filled with liquid and tending to pass into the condition of cysts.

C. Pepsiniferous glands, the divisions of which are atrophied; three of the divisions terminate in a dilatation which represents a true cyst. 1. Trunk of the gland. 2, 2, 2. Its different branches. 3, 3, 3. Cysts arising from them.

* 'The Diseases of the Stomach.' By Wilson Fox, M.D., F.R.C.P., F.R.S. P. 65.

Modern physiology teaches us that the secretions of the various glands are elaborated by the epithelium lining them, and consequently that where, as in atrophy of the kidney, there is a destruction of the cells there must be a corresponding deficiency of the substances secreted by them. Unfortunately we are not able to collect and subject to chemical tests the gastric fluid during life as we can the urine. It is, however, well known that we can roughly estimate after death the amount of pepsin present in the mucous membrane of a stomach by making an infusion of it, adding a small quantity of hydrochloric acid, and digesting in this artificial gastric juice some fibrin or coagulated albumen, the weight of which has been previously ascertained.

The following plan was therefore adopted in a large number of cases. The stomach was emptied of its contents and placed in strong spirits of wine for a few days, so that sections of the mucous membrane might be obtained for microscopical examination. When this was done it was carefully scraped from the subjacent coats, and its weight ascertained. One hundred and twenty grains were beaten up with one ounce and a half of distilled water, and allowed to stand in a warm room for twelve hours, the mixture being afterwards passed through a coarse filter. To one ounce of this fluid fifteen minims of hydrochloric acid were added, and in it was placed a cube of hard boiled white of egg, the weight of which had been previously ascertained. The bottle containing this artificial gastric juice was kept for twelve hours at a

temperature of 98°, at the end of which time the albumen was removed and was again carefully weighed. The loss, of course, indicated the activity of the pepsin to the action of which the albumen had been subjected.

In seventeen of the stomachs thus treated, taken from the bodies of persons who had died of various diseases, but in which there was no marked evidence of atrophy, the average loss of albumen was four grains; but wherever there was extensive atrophy artificial digestion was very slow and imperfect, and in one case only six tenths of a grain of albumen was dissolved, whilst in another it was only slightly softened and had not lost weight at all. It is evident, therefore, that what we might anticipate from analogy actually occurs. Atrophy of the secreting structures of the stomach is accompanied by a diminution or complete loss of the pepsin, and we are justified in concluding that, wherever this morbid change is present, there must be a corresponding deficiency in the functional activity of the organ.

In chronic Bright's disease, although those constituents of the urine which are peculiar to it are much lessened, the quantity of water secreted is usually greater than in the normal state. It would be interesting to ascertain whether the same holds good with respect to the stomach, but to this we are unable to return any satisfactory answer, for the gastric fluid is so quickly resorbed that we cannot estimate its amount. We are equally unable to determine whether the acid of the gastric juice undergoes any alteration either in its quantity or quality.

But although all pathologists who have investigated the stomach with the aid of the microscope admit that atrophy of the gastric tubules is of common occurrence, they also agree that the amount of disease is usually comparatively small. Their impressions as to the frequency with which it is met with necessarily vary according to the method of examination they have pursued, the age of the individuals, and the causes of their deaths. It is seldom discovered in young subjects, whilst it is frequently present in the aged, and, as will be afterwards shown, it is common in those who have died from certain forms of cancer. I found a limited amount of atrophy in ten out of fifty cases taken indiscriminately from my note books. Sappey affirms that he has seen few stomachs in which there were not some pepsiniferous glands so altered, and that the change was most generally present in the cardiac region and at the splenic extremity. On the contrary, I have rarely met with atrophy in these positions, but have seldom examined the pyloric end of the stomach in an old person without being able to detect some evidence of its presence.

We may now inquire to what this destruction of the gastric glands may be attributed. This, I need scarcely say, is a general, rather than a special pathological question, for the analogous change in the kidney has given rise to no small difference of opinion as regards its causation.

Dr Handfield Jones is inclined to refer the process to fibroid degeneration, whilst Dr Wilson Fox, Sappey, and others, believe it results from inflammation alone.

As, however, both these morbid actions are capable of producing atrophy of any secreting structure, it is reasonable to suppose that the cause may vary in different cases. When, for example, we meet with numerous isolated spots of mucous membrane in the more active parts of the organ, from which all traces of gland structure have disappeared, it is fair to look upon them as the results of some former ulcerations of the surface. But, on the other hand, inflammation can scarcely be the cause of the extensive fibroid changes we so constantly meet with in the pyloric region of the stomach of persons advanced in life. The absence of any history of gastric catarrh and the diminished calibre of the blood-vessels in the affected parts seem to point to a degenerative, rather than to an inflammatory change. Besides this, it must be borne in mind that the lower ends of the tubules generally first exhibit traces of the morbid action, though most of the circumstances that excite inflammation affect the surface, and it is by no means unusual, as was before mentioned, to discover the orifices of the tubes open and in a normal state, when their closed extremities are atrophied and reduced to flask-like bodies.

CHAPTER II

SYMPTOMS OF ATROPHY OF THE STOMACH

It is evident that a moderate amount of atrophy of the gastric tubules is of common occurrence, and that in the parts thus affected there is an absence or diminution of the amount of pepsin. But, on the other hand, this change is chiefly met with in persons advanced in life, it is rarely extensive, and is usually confined to the pyloric region, which is, as regards its power of secretion, the least active portion of the organ.

As in these cases no symptoms have been observed during life indicating a very defective state of the digestive functions, it is reasonable to suppose that any diminution in the amount of the gastric juice that may have arisen from the atrophy has been compensated for by an increased activity of the remaining healthy glands. Again, in the case of old persons the amount of food required to replace the daily waste is so much less than in youth, that the destruction of a moderate amount of the secreting structure can scarcely affect the general health.

But it may be readily imagined that if the larger number of the pepsiniferous glands should be destroyed, the supply of albuminous material would be so greatly diminished that the nutrition of the

whole body must be impaired. Under such circumstances the person would be as effectually starved by the failure of the stomach to dissolve the materials placed within it, as if only a very limited and insufficient quantity of food was given him to eat. Atrophy of the stomach to such an extent is fortunately very rare, but the following cases will prove that such an occurrence occasionally does take place, and is followed by the results which we might anticipate from it.

Case 1.—A gentleman, forty-five years of age, had been ill for about eighteen months, but his symptoms had come on so gradually that it was difficult to fix the exact time when he had felt in perfect health.

He complained of great weakness and inability for mental or bodily exertion. Occasionally he had pains in the back and numbness of the legs, but there was no loss of sensation nor any appearance of paralysis. He suffered from breathlessness and palpitation on the least exertion. He was not emaciated, but his face was of that pale-yellowish colour so often seen in persons affected with malignant disease; and the lips, tongue, and throat were bloodless. His appetite was exceedingly bad; he suffered from flatulence, and occasionally from bilious vomiting, and the bowels were much confined. The pulse was unusually small and feeble. He was unable to assign any cause for his complaint. There was no history of phthisis or cancer in his family; he had lived temperately, and had always enjoyed excellent health until his present illness.

On careful examination, no dark patches could be discovered either in the mouth or on the skin; the heart and lungs appeared to be perfectly normal; the liver and spleen were of the usual size; there was no enlargement of the thyroid or of the lymphatic glands; the stomach was not dilated, and no abdominal tumour could be detected. The urine was clear, acid, and free from albumen and sugar. A drop of blood taken from his finger, when examined by the microscope, showed no increase, but rather a diminution, in the number of the white globules.

I prescribed steel and quinine, with a small dose of cod-liver oil, and recommended a nutritious diet with a moderate allowance of wine.

About a week after I saw him I learned that he had been attacked with severe and persistent vomiting. Some of the fluid rejected from the stomach was sent me, but, on examination, it proved to be only bile. After a purgative the vomiting ceased.

When he again visited me he looked more pale and feeble than before. The pulse was now so small that it scarcely could be felt, and I was unable to obtain a sphygmographic tracing. He complained of a little pain below the clavicle, but in other respects his symptoms were unchanged. His appetite was exceedingly bad, and he was distressed with flatulence.

After this he gradually became more feeble and anæmic, and at last sank from exhaustion, being delirious two or three days before his death.

Post-mortem examination.—The skin was of a pale-yellow colour, and there was no dark discolouration;

there was a large amount of fat in the subcutaneous tissue; a considerable quantity of fluid was found in the left pleura, and both lungs were rather œdematous, but, excepting a slight grittiness in each upper lobe, there was no other disease. The heart was covered by a layer of fat, but was otherwise normal; its cavities were unusually empty, only a small, soft,

Fig. 2.

× 100

gelatinous clot being present in the right ventricle. The liver, spleen, pancreas, and supra-renal capsules were normal. One kidney seemed somewhat congested, but was healthy in its structure.

The stomach was empty, excepting a quantity of gas, and *it showed no signs of post-mortem solution.* When small portions were placed beneath the micro-

scope, the depressions upon its surface were seen to be well-defined and rather larger than usual. The whole of the glandular structure of the organ was in a state of atrophy, and in no part could I succeed in obtaining a specimen of perfectly normal structure. In the pyloric and middle regions the secreting tubes seemed to be converted into a mass of fibrous

Fig. 3.

× 100

tissue, as seen in Fig. 2, and it was only near the cardiac end that pepsiniferous glands could be observed. In this situation the tubes were represented by scattered flask-like bodies filled with granular matters and fatty epithelial cells (Fig. 3). In other places the ends of the tubes were expanded, as seen in Fig. 4, into the form of cysts. Each of these was sur-

rounded by fibres, and was lined internally by a layer of cells, the contents consisting of fatty cells and of granular matters. The villi of the upper portion of the intestine were prominent and contained fat. The fat, however, was not in the form of emulsion, but appeared in the shape of large drops in the interior of the villi. After the microscopical examination was

FIG. 4.

x 100

concluded, I scraped off the mucous membrane of the stomach, and made an infusion of it with distilled water. To two ounces of this infusion was added half a drachm of hydrochloric acid. A cube of hard-boiled albumen of an egg was suspended in the mixture and was digested in a water-bath at blood-heat for nine hours. At the end of this period the albumen

was slightly softened on the surface, but its weight was not lessened.

Case 2.—Dr C— requested my opinion as to the nature of his disease. He was fifty years of age, and had served as an army surgeon in different climates, without ever having suffered from ill-health. Within the last two or three years cough and some dyspnœa had come on, but not to any great extent. Twelve months ago he observed his strength to be failing, which he attributed to a damp house, but on removal to a fresh locality no improvement had taken place.

When I saw him he was lying on a sofa. His face was very pale, the lips quite white, and when he attempted to rise, on my entering the room, the effort brought on an attack of dyspnœa. It was with difficulty he was able to walk to a chair, into which he dropped as though exhausted by the effort. He spoke slowly, and in a low voice, and stated that weakness and an utter absence of appetite were his chief grounds of complaint. He had, however, pains in his limbs after any exertion, and the slightest movement caused palpitation and difficulty of breathing. The tongue was clean, and there was no vomiting. He could eat some chicken, but had a great dislike to other kinds of animal food. The bowels had been much relaxed for some days, but before that time were in a natural state. The pulse was remarkably small and thready.

There was a loud systolic murmur over the aortic valves and along the course of the aorta. The percussion note over the lungs was abnormally clear, and

sonorous rhonchi, with increased expiration, could be heard throughout the chest. Both the hepatic and splenic dulness were normal in extent. No tumour could be discovered in the abdomen, and the urine was free from albumen and sugar.

Finding no cause for the anæmia, I explained to him that, in all probability, he was affected with atrophy of the stomach. He at once concurred in this opinion, and said it was the only one that could explain his condition. He remarked that his heart felt "empty of blood," and that he had been obliged to abstain from stimulants from the unpleasant feeling they produced, which he stated was as if the heart was forced to contract when it had no blood in it. The next day he insisted upon being removed into town, but when in the carriage he became insensible, and died in a state of coma a few hours after reaching the lodgings he had engaged.

Post-mortem examination.—The skin was of a pale yellow colour, similar to that generally seen in those who have died of cancer. There was a large amount of fat, which was unusually yellow. The veins were very empty of blood, and upon opening the heart only a few clots were present. The muscular structure of the organ was soft, and broke down very readily. The lungs were emphysematous, but not to any very great degree. There was no disease of the suprarenal capsules or of the lymphatic glands. The brain was not allowed to be examined.

The stomach was distended with gas, but had no fluid contents. It was remarkably thin—so much so,

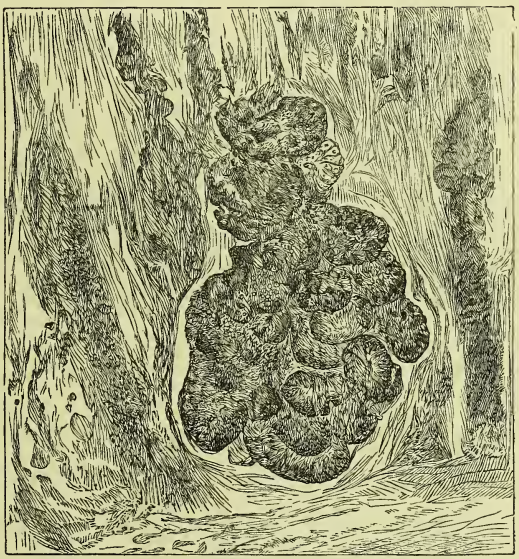
that I at first thought it must have undergone post-mortem solution, but its empty state showed this could not have been the case. It was carefully removed, and placed in strong spirits for microscopic examination. Sections were taken from every part of it, but in no case was one obtained of perfectly normal structure. The amount of disease, however, varied considerably,

Fig. 5.

being greatest towards the cardiac end, and least in the pyloric region. In the most healthy parts, which I guessed as affording about one section in every ten, the secreting tubes could be easily recognised, but they were enlarged and irregularly distended with cells and granular matters, intermixed with small masses of fatty material. The basement membranes

were somewhat thickened, but not to a great extent. The tubes were everywhere united to each other and to the subjacent muscular layer by a tissue composed of fine short fibres mixed with cells and nuclei (see Fig. 5). In some parts the tubes could be traced throughout their whole length, in other places their lower ends were alone capable of being recognised.

Fig. 6.

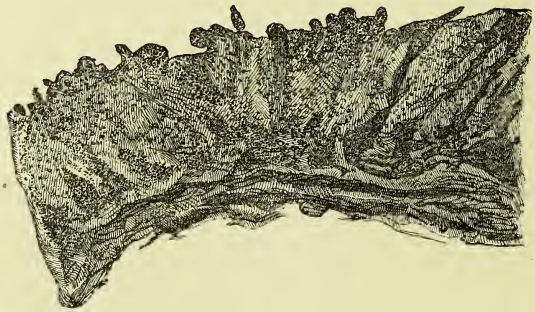


On proceeding towards the surface there seemed to be a gradual decrease in the quantity of the newly-formed cells and fibres situated between the tubes.

In the sections where the disease was more advanced the cells and fibres uniting the secreting tubes were still visible; the basement membranes were, however, less thickened, and the lower ends of the tubules were

more distended. Their contents were composed of a greater number of large fatty cells, and they were so choked that few normal cells could be discovered. Here and there a group of obstructed tubes presented itself, some of them being dragged from their natural position, so as to assume a horizontal direction, and the continuity with their upper ends appearing to be cut off (see Fig. 6). In the parts in which the disorganisation was most complete no

Fig. 7.



tubes could be discovered, but masses of granular and fatty matters in a globular form were the only representatives of the original glands. The basement membranes could not be recognised as surrounding these masses, which were scattered irregularly through the tissue. Many blood-vessels, both arteries and veins, of unusual size and with greatly thickened coats, presented themselves. In some parts the globular masses of granular matter seemed to have been absorbed, and empty spaces were left, as though cysts had been in process of formation. These spaces were not confined to the deepest parts of the mucous membrane,

but were occasionally to be found near the surface. In other places not a remnant of a tube could be seen, and the whole mucous membrane consisted of fibres, with a few scattered cells and fatty globules (see Fig. 7).

Case 3.—I am indebted to the kindness of Dr Ramskill for permission to publish the following case. I did not see the patient during life, but was present at the post-mortem examination :

H. T—, aged fifty-four, carman, admitted April 23rd, 1874. For the last twenty years has been subject to cough, and for six months has been gradually growing weaker and losing flesh; has had gaseous eructations, bad taste in the mouth, heaviness after food, and heartburn. The pulse was feeble; appetite very bad; bowels regular. He gradually became more feeble, and on June 2nd the following note was made:—"A large, well-made man, exceedingly pale, with the fawnish-white colour of idiopathic anæmia, not the pure white of rheumatism or syphilis. Lips are very pale indeed; lies on his back, is unable to turn or raise himself, and when asked a question is very slow in answering. His face is expressionless, he is almost pulseless, breathing laboured, and the epigastrium sinking in, but not greatly, with each inspiration."—June 3rd: He had continual vomiting, rejecting even the milk and brandy on which he had lived for the last few days. Grew more apathetic, and died at 1 A.M.

Post-mortem examination.—Lungs : Right apex hard, fibroid to the depth of half an inch, and firmly adherent by pleuritic adhesions, as was the left apex, but with-

out any fibroid or other change. The lungs were large, emphysematous, and anæmic. Heart large, and affected with fatty degeneration; walls covered with fat; muscle soft; clots pale. Brain atrophied, intensely anæmic.

The stomach was carefully washed and placed in spirit. It showed no appearance of post-mortem solution. It would be tedious to relate the results of the microscopical examination, as every part of the gland-structure presented appearances of disorganisation similar to those described in the foregoing cases.

Case 4.—The following case is reported by Dr Handfield Jones, and is evidently similar to those just mentioned:

"T. P—, male, aged sixty-two, very anæmic, has generally lived quietly, worked hard, and been a good deal exposed to the weather. Was never laid up before this attack, and does not remember having had any previous illness. Six months ago had an accident, not injuring him materially. A fortnight after this dropsy appeared in the legs. Has had cough and watery-mucous expectoration. Pulse regular, of moderate force. There is a loud systolic murmur at the apex of the heart. The second sound can be heard at the base pretty clear, but attended by some murmurish sound. On each side of the neck the systolic can be heard, but loudest on the left. The appetite was not very good, and there was occasional diarrhœa, or a tendency to it. He remained in the hospital (St Mary's) several weeks, and improved somewhat, the

anæmia, however, scarcely diminishing, and then went out. He returned to the hospital much weaker on September 20th, gradually declined, and died on October 7th."

Post-mortem examination. — There was *extreme anæmia.* The heart was large, its walls hypertrophied, its tissue of good colour. Stomach: The mucous membrane was generally pale, but tinged yellow by bile, with a few vascular arborisations here and there. Two portions of the mucous membrane were carefully examined, and found to be most gravely altered. In vertical sections no trace of the tubes was to be seen. The basement membrane still existed in some parts, in others it was lost. Beneath it was a layer of fibroid tissue, containing at its lower part numerous fat-vesicles. After the addition of acetic acid, some remnants of the tubes were brought into view, embedded in an indistinctly nucleated fibroid stuff. One of these appeared as an imperfect tube slightly bulged at its lower part, another as an oval cyst with a short truncated neck, another as a spherical cyst containing some granular matter and oil-molecules. The tube and oval cyst contained only an indistinct granular or granulo-fibrous matter.

Here was a case of extreme wasting of the secreting structure of the stomach, coinciding with like wasting of the blood, without any apparent cause and without any symptoms that could excite suspicion of the extent of the lesion."*

* 'Pathological and Clinical Observations respecting Morbid Conditions of the Stomach.' By C. Handfield Jones, M.B., F.R.S.

In all the above cases it will be observed extensive disorganisation of the glandular structures of the stomach was discovered after death. But it has been suggested that such changes in the gastric mucous membrane might be the results of post-mortem solution. It would seem sufficient to remind these objectors that post-mortem digestion is produced by the action of the acid secretion of the stomach remaining in the organ at the time of death, and that in the cases just quoted it was in every instance empty, no doubt from the great aversion to food manifested by the patients. In addition to this, when the mucous membrane in the first case was employed to form an artificial gastric juice, it contained so little pepsin that a portion of albumen suspended in it was scarcely acted upon. But more effectually to dispose of this objection, I may remark that in ordinary post-mortem solution the surface of the stomach is necessarily first exposed to the acid, and therefore most extensively dissolved; whereas, in the cases above quoted, this was the part which presented the fewest changes. Where the gastric juice has disorganised a mucous membrane every trace of structure may be removed; but a solvent can never produce *new* tissues, such as were found by the microscope—viz. newly-formed cells and fibres, thickened basement membranes, enlarged and distended tubes and cysts.

Case 5.—A case is given by Dr J. Gilham, of Nelsonville, Ohio. It was published in the 'Philadelphia Medical and Surgical Reporter,' but I have been unable

to obtain the original paper. The following abstract is from Schmidt's 'Jahrbücher' for 1872:

"A man, forty-five years of age, had gradually been affected with increasing bodily weakness, mental obtuseness, palpitation, and dyspnœa on exertion, loss of appetite, flatulence, and inclination to bilious vomitings. The loss of flesh was not striking, the appearance was of a pale yellow, the mucous membranes very pale, the white blood-cells not increased. The vomitings became more obstinate, the weakness and anæmia increased more and more, and death resulted from exhaustion. The post-mortem examination afforded extensive degeneration and atrophy of the gastric tubules as the only apparent cause of the disease."

The following is extracted from Sappey, but no detailed account of the symptoms is given:

Case 6.—"More recently in the stomach of a young man, of thirty-two years, who had died in a state of marasmus, almost all the pepsiniferous glands were completely destroyed; those that occupied the neighbourhood of the pyloric region had alone survived the work of disorganisation."*

In support of the conclusions that may be drawn from the above cases is the remark of Rokitansky. That in rare cases, in individuals who have died of marasmus, there is found atrophy of the walls of the stomach, with a striking thinning of the mucous membrane (compare Case 2). "It is extraordinarily thin

* Sappey, 'Traité d'Anatomie Descriptive,' tome 4, p. 186.

and transparent, and along with this the glands are shrunken, and contain wasted cells, nuclei, and detritus."*

It will be observed that all the above cases are remarkably similar in the symptoms observed during life as well as in the morbid condition of the stomach discovered after death.

All were males, varying from forty-five to sixty-two years of age; they were, therefore, at that time of life in which the vital powers have begun to fail and where degeneration of the tissues is most liable to take place. The duration of the illness varied from six to eighteen months, but in every case the disease, once it was developed, gradually but steadily increased, without being checked or ameliorated by treatment.

The first symptom of illness was a feeling of fatigue after exertion, and this increased to such an extent that towards the termination of the malady any attempt at exercise was obliged to be given up, and the muscular weakness became so intense that the patients were confined to the recumbent position. Pains of the back and limbs were a common subject of complaint, and were generally described as similar to those resulting from excessive fatigue.

Dyspnœa, increased by any exertion, was experienced towards the termination of each case, and was, in all probability, chiefly the result of the anæmia, but it was perhaps also partly referable to the emphysematous condition of the lungs, which was present in two of

* Rokitansky, 'Lehrbuch der Pathologischen Anatomie.'

the subjects of the disease. Palpitation was another symptom which always presented itself. It was aggravated by the slightest exertion, and one patient, who was a physician, described the sensation as if the heart was so empty that it was unable to obtain a sufficient supply of blood to enable it to contract. The pulse was in each instance exceedingly small, feeble, and compressible, becoming thready as the disease progressed.

Along with these symptoms anæmia was present from the first. The face had the lemon-coloured hue so often seen in the later stages of malignant disease, the lips and conjunctivæ were devoid of colour, and when the finger was pricked by a needle only a small drop of blood could be squeezed from the puncture. Nevertheless the microscope showed no increase in the number of the white corpuscles, and no abnormal appearance could be detected in the coloured cells.

The strength of the patients very gradually failed, and death was usually preceded by low, muttering delirium or by coma. In the first case it was wonderful how long life endured; day after day it seemed certain that the patient was dying, and nevertheless slight revivals of strength took place, when to all appearance he was about to sink.

The symptoms pointed strongly to a defective condition of the digestive organs. One of the earliest manifestations of the malady was failure in the appetite, and this steadily increased, until it was difficult to persuade the patient to eat at all. At first an

aversion to meat was usually expressed, whilst fish, vegetables, and farinaceous food were taken without much reluctance; but as time went on the dislike to all nourishment became more marked, and the empty state of the stomach after death showed how impossible it had been for the attendants to induce the patient to partake of it. In the earlier stages flatulence was a source of much distress, notwithstanding the small amount of food that was taken. This would seem to show that the secretion of gastric juice was so defective that it was insufficient to prevent decomposition. Heartburn was in one instance complained of, but did not show itself in the others. Vomiting was present occasionally or recurred frequently in all the cases. It was probably the result of irritation of the stomach caused by the partially digested state of the food. The bowels were either confined or relaxed, but unfortunately I had no opportunity of examining the evacuations; the urine was in every case free from sugar or albumen, and was of normal specific gravity.

It will be observed that pain after eating was not complained of, and the vomiting was only occasional, so that there was no evidence of a chronic inflammatory condition of the stomach. This is of interest as tending to show that the destruction of the secreting tubes was the result rather of a slow degenerative process than of inflammatory action.

In considering these cases it will be remarked that the prominent pathological condition observed during life was one of intense anæmia, and that after death

the heart and other parts of the vascular system were remarkably empty of blood. It was not watery or deficient in cells, but was so greatly reduced in bulk that the body might have been readily mistaken for that of one who had perished from hæmorrhage. During life all the more prominent symptoms could be most easily explained by the supposition that the various tissues were starved of their usual supply of nourishment.

If we consult the teaching of modern physiology we see that the volume of the blood depends on the quantity of nutriment dissolved and absorbed by the digestive tract. The albuminous materials of the food are altered in their physical properties by the action of the stomach, and thus enabled to pass through the mucous membrane. Even the quantity of water absorbed is believed to be chiefly regulated by the amount of the albuminates in the blood, as a large portion of it is chemically combined in the liquor sanguinis. If then in any case we should find a deficiency in the quantity of the circulating fluid where there has been no loss or undue waste of it, and where there has been a sufficient supply of food, we should naturally look for some defect in the condition of the gastro-intestinal tract to explain the emptiness of the vascular system. In the cases before quoted, along with extreme anæmia, there existed well-marked and extensive atrophy of the secreting tubes of the stomach, and it was proved in one case that the part of the mucous membrane that was tested was incapable of furnishing an artificial digestive fluid. The natural

conclusion, therefore, is that the gradually increasing anæmia was the direct result of the disorganisation that had taken place in the glandular apparatus of this important organ.

It will be remarked that the cases quoted from Rokitansky and Sappey, in which atrophy of the tubules of the stomach was present, are said to have died of "marasmus." In those that came under my own observation there was no wasting, although the appearance of anæmia was most marked during life and the vascular system was very empty after death. On the contrary, the patients were all inclined to be fat. This point seems to be worthy of careful consideration, as it probably indicates a difference either in the parts affected or in the nature of the disease.

The reason why these anæmic patients remained so fat is, in all probability, partly from the imperfect oxidation arising from the deficiency of the red corpuscles of the blood, and partly because the stomach being alone affected the fatty and starchy materials of the food could be freely digested and absorbed. In Case 1 the villi of the intestine were observed to contain oil, and perhaps the non-admixture of albumen with it would render its oxidation more difficult than under normal circumstances.

Although no disease was discovered in the intestines in the foregoing cases I have found morbid changes in them associated with a similar state of the stomach in persons who have died of cancer of the breast and uterus. There was sometimes a great

increase in the number of nuclei in the intestinal villi, and when this was present the mucous membrane was more hard and tough than in its normal condition; the nuclei were very prominent, there was generally a deficiency of granular matter, and the basement membrane was much thickened. Brunner's glands and the follicles of Lieberkühn often presented similar anatomical changes. In some cases the villi were excessively fibrous, and had a wasted appearance. The fibres were disposed in a direction parallel to the long axis of the villi, and between them were lines of prominent nuclei. In some instances Brunner's glands were greatly enlarged, in others the basement membrane was very thick, and the cell-structures were reduced to a state of atrophy.

Occasionally fatty degeneration of the mucous membrane was present. The appearance of fat was not the result of its absorption, for Brunner's glands were in a similar condition. The villi were very thin and transparent, and so soft that they could be crushed with the slightest pressure. Small globules of oil were diffused everywhere, and in many parts of the intestines the follicles of Lieberkühn were either absent or the remains of their closed ends were alone visible, as in atrophy of the stomach.

These anatomical changes in the intestines have attracted much less attention from pathologists than the physiological importance of the parts affected seems to demand. It is reasonable to conclude that in some of the cases of anæmia, where post-mortem examination has failed to discover sufficient cause for death, the

microscope might display grave alterations in the important structures, whose office it is to digest both fat and starch, as well as to absorb the whole of the nutriment of the body. The following case was, I think, probably one of degeneration of the whole of the digestive canal.

Case 7.—A woman, sixty years of age, was admitted into the London Hospital. She was very feeble and anæmic, and had suffered from diarrhœa. She had formerly lived much in tropical climates, but she died a few days after admission, before a complete history of her case could be obtained.

Post-mortem.—The liver was somewhat fatty, and there was a little fluid in one pleura, but otherwise the viscera were healthy. The stomach and intestines were, however, so exceedingly thin and wasted as to seem almost transparent. There was no trace of ulceration. The structures were unfortunately not examined with the microscope.

The following observations from that admirable observer, Dr Abercrombie, are important as bearing upon this question :

" The affection which I refer to under this head would appear to be connected with some morbid condition of the mucous membrane of the intestinal canal, the precise nature of which eludes our observation. The patient is found thin, pale, and weak, with a withered look, a peculiar dry state of the skin, and a small weak pulse. His appetite is variable and capri-

cious, and he feels uncomfortable after eating. The bowels are slow, though easily regulated, and the evacuations are always of a remarkably dark colour, like dark mahogany, or almost black. The obscure nature of the affection will appear most strikingly from the following case, which was fatal:

"A lady, aged about thirty, had been in bad health for four or five months, and when I saw her was wasted like a person in an advanced stage of phthisis. She had a small, frequent pulse and bad appetite, but complained of nothing except some undefined uneasiness in the abdomen. The bowels were slow, requiring the constant use of medicine; the motions were consistent and formed, but always of the deep brown colour of dark mahogany or rosewood, and no treatment had any effect in correcting that colour. The abdomen was collapsed, and nothing could be discovered by examination. Some time after I saw her she began to have uneasiness in her chest, with slight cough; she then became liable to fits of coma, in which she lay with her eyes open, but unconscious of anything; at length she had repeated paroxysms of convulsion, and she died in a state of the most extreme emaciation, after an illness of eight or nine months' duration.

"*Inspection.*—No disease could be discovered in the brain, and the lungs were quite healthy, except some very old adhesion of the pleura. The intestinal canal was throughout so thin as to be transparent like gold-beater's leaf. On the mucous membrane there was in many places a tenacious mucus of a dark brown colour, but no disease could be discovered in the membrane

itself, and no morbid appearance could be detected in any other organ.

"I do not attempt to explain this case. The only conjecture that can be offered in regard to it is some morbid condition of the mucous membrane interfering with digestion and preventing the nourishment of the body."*

There can be little doubt, from the thinness of the mucous membrane, that there was extensive degeneration of the intestines in the two foregoing cases. Emaciation was in both a prominent symptom, which was not present where atrophy of the stomach existed alone. But, as both Rokitanski and Sappey mention marasmus as occurring with atrophy of the gastric glands, and as the microscope shows that a similar anatomical change frequently coexists in the stomach and intestines, it is reasonable to suppose that such was the case in the subjects they examined.

* 'Pathological and Practical Researches on Diseases of the Stomach, &c.' By John Abercrombie, M.D. Third edition, p. 306.

CHAPTER III

THE RELATION OF GASTRIC ATROPHY TO OTHER FORMS OF "IDIOPATHIC ANÆMIA"

It is almost unnecessary to remark that the cases described in the last chapter are identical with those usually comprised under the head of "idiopathic anæmia." Indeed, most of the symptoms are not the immediate results of the atrophy of the stomach, but arise from the deficiency of blood produced by it. It will be well to refer to the account of Dr Addison, who first described "idiopathic," or, as it is now more generally termed, "pernicious anæmia," in order that the cases before given may be compared with it.

"For a long period," he says, "I had from time to time met with a very remarkable form of general anæmia, occurring without any discoverable cause whatever—cases in which there had been no previous loss of blood, no exhausting diarrhœa, no chlorosis, no purpura, no renal, splenic, miasmatic, glandular, strumous, or malignant disease. Accordingly, in speaking of this form in clinical lecture, I perhaps with little propriety applied to it the term of 'idiopathic,' to distinguish it from cases in which there existed

more or less evidence of some of the usual causes or concomitants of the anæmic state.

"It occurs in both sexes, generally, but not exclusively, beyond the middle period of life, and, as far as I at present know, chiefly in persons of a somewhat large and bulky frame, and with a strongly-marked tendency to the formation of fat.

"It makes its approach in so slow and insidious a manner that the patient can hardly fix a date to the earliest feeling of that languor which is shortly to become so extreme. The countenance gets pale, the whites of the eyes become pearly, the general frame flabby rather than wasted; the pulse, perhaps, large, but remarkably soft and compressible, and occasionally with a slight jerk, especially under the slightest excitement; there is an increasing indisposition to exertion, with an uncomfortable feeling of faintness or breathlessness on attempting it; the heart is readily made to palpitate; the whole surface of the body presents a blanched, smooth, and waxy appearance; the lips, gums, and tongue seem bloodless; the flabbiness of the solids increases; the appetite fails; extreme languor and faintness supervene, breathlessness and palpitations being produced by the most trifling exertion or emotion; some slight œdema is probably perceived about the ankles; the debility becomes extreme; the patient can no longer rise from his bed, his mind occasionally wanders, he sinks into a prostrate and half torpid state, and at length expires. Nevertheless, to the very last, and after a sickness of perhaps several months' duration, the bulkiness of the general frame and the

obesity often present a most marked contrast to the failure and exhaustion observable in every other respect." *

The cases I have given were in every particular in striking conformity with the picture thus drawn by Dr Addison. There was anæmia without apparent cause, the complaint attacked persons at or past middle life, and the commencement of the illness was so insidious that the patients could scarcely fix the date of its first occurrence. The heart was feeble, the pulse very small and weak, and dyspnœa was produced by the slightest attempt at exertion. In all, death seemed to result only from the want of blood.

It is clear that some of the cases Dr Addison had in view when he wrote were instances of atrophy of the stomach, but it is equally certain that all those at present grouped under the head of pernicious anæmia are not of this nature.

It will be readily conceded that the anæmia that accompanies atrophy of the stomach is the result of the imperfect secretion of the gastric juice consequent upon it. In the case of the kidney, however, only a certain number of those who die from uræmia present after death the granular kidney which is analogous to gastric atrophy. A large proportion of the subjects of renal disease perish from inflammation and consequent degeneration of the epithelium of the tubes alone, and no pathologist is in doubt as to the cause of death, when

* 'On the Constitutional and Local Effects of Disease of the Supra-renal Capsules.' Writings of Thomas Addison, M.D. (New Sydenham Society, vol. xxxvi.)

he encounters large white kidneys in the body of one who has presented uræmic symptoms during life. The question, therefore, arises whether we ever meet with a morbid condition of the tubules of the stomach analogous to that with which we are so familiar in the kidneys.

Every observer who has employed the microscope in his investigations admits that fatty degeneration is a common result of chronic inflammation affecting the epithelium of the gastric glands. Dr Wilson Fox, for example, states that "fatty degeneration of the glands generally occurs in the stomach, as in other glandular organs, in scattered groups of one or two lines in diameter, giving the appearance of small dead-white spots embedded in the mucous membrane. When microscopically examined the epithelium of the tubes is either found fattily degenerated, or the cells have entirely disappeared, and the contents of the tubules consist of nothing but free fat-granules. The tubes are often irregularly narrowed and puckered, and thickening of the membrana limitans may not unfrequently be observed around their bases; and these changes lead finally to the destruction of the tubes at some part of their length, and to the formation of cysts from the distension of the portion below the obstruction with the products of secretion." *

What Dr Wilson Fox has here described as a local change we occasionally find to be general. In one instance examined by myself 33·5 per cent. of the whole mucous membrane of the stomach when dried

* 'The Diseases of the Stomach.' By Dr. Wilson Fox. p. 137.

consisted of fatty material, and the artificial gastric juice made from it proved to be incapable of dissolving albumen.

It is worthy of remark that a fatty state of the gastric tubules has been frequently noted by authors as present in those who have died of pernicious anæmia, but as the heart and other structures are also commonly overloaded with fat in this disease, no significance has been attached to the circumstance. I am induced, however, to regard it as often the cause, instead of being merely the consequence, of the malady, and believe that future researches will throw great light upon the question. The following case was, I believe, one of general fatty degeneration of the stomach, although it is impossible to be certain on the point, from the liability of this organ to changes, after death.

Case 8.—A woman, about thirty-five years of age, was admitted under my care into the London Hospital with all the ordinary symptoms of pernicious anæmia. She gradually sank, in spite of varied treatment, and after death I found the whole mucous membrane of the stomach so *soft* and broken up that I could not satify myself as to its condition during life. At all events, there was no atrophy of the glandular structure.

It was before remarked that in gastric atrophy there is rarely any appearance of post-mortem solution, and the question may naturally be asked how it can happen that a stomach in such a state of fatty

degeneration, as to be incapable of digesting sufficient food during life for the due supply of the body, can undergo this change after death. The explanation seems to be that the disorganisation is never so complete that all the glands are destroyed, for if so death would have occurred at an earlier period, and consequently a certain amount of pepsin is always present. But the same rule holds good of the coats of the stomach as of the food daily placed within it during life, viz. the more soft the material the more easy it is of solution. Now, a mucous membrane in a state of fibroid change is so hard that the contents of the stomach scarcely act upon it after death, and it is therefore dissolved with difficulty, whereas one that has undergone fatty degeneration is rapidly digested by any gastric juice that may be present. This is not a mere theory, for I have placed portions of different stomachs that had undergone these morbid changes in the same artificial gastric juice, and have found the fatty membrane readily dissolved, whilst that which was in a state of atrophy remained almost unaltered.

But we must remember that the fibroid and fatty changes do not complete the list of the morbid alterations to which the stomach is liable. Like other organs of a similar structure, it frequently presents lardaceous degeneration, and, although this has not been as yet sufficiently studied, analogy would lead us to expect that its secreting power would be much impaired by it. In rare instances I have seen the mucous membrane in a very gelatinous condition, but I am unable to state its exact nature,

or whether it is associated with any loss of its functional activity.

Anatomical changes in the ganglia present another possible cause of diminution of the gastric secretion in pernicious anæmia. Dr Addison had this in view as an explanation of the phenomena of the disease, as will be seen from the following quotation from his work: —"On examining the bodies of such patients after death, I have failed to discover any organic lesion that could properly or reasonably be assigned as an adequate cause of such serious consequences. Nevertheless, from the disease having uniformly occurred in fat people I was naturally led to entertain a suspicion that some form of fatty degeneration might have a share at least in its production; and I may observe that in the case last examined the heart had undergone such a change, and that a portion of the semilunar ganglion and solar plexus, on being subjected to microscopic examination, was pronounced by Mr Queckett to have passed into a corresponding condition."

Since Dr Addison's time, the anatomical alterations to which the abdominal ganglia are subject have been more carefully investigated, but no support to the above idea has been afforded by these inquiries.

We might imagine that a morbid state of any organ that assists the stomach in the digestion of the albuminous materials of the food would also be capable of producing the group of symptoms known as pernicious anæmia. Cases of extreme bloodlessness are given by authors in which disease of the pancreas was found

after death, but they were accompanied by wasting, not by obesity.* The reason of this difference is obvious, when we reflect that the functions of this organ are connected with the digestion of fat and starch as well as of albumen. I have already pointed out that in general atrophy of the mucous membrane of the small intestines the defective supply of blood is also associated with marasmus, and the appearance of a person affected with it therefore differs greatly from that of one suffering from pernicious anæmia.

Dr Addison discovered the disease of the supra-renal capsules now generally known by his name, and described the discoloration of the skin which is characteristic of the malady. But subsequent experience has shown that the symptoms he pointed out do not arise from an interference with the function of these bodies, as was at first supposed, for they have been found disorganised without bronzing being present. Most pathologists are, therefore, now inclined to refer the symptoms of Addison's disease to the implication of the nerves in the immediate vicinity of the capsules. But, on the other hand, although morbid changes in the ganglia and their nervous connections have been repeatedly proved to be present in this disorder, yet it has been also shown that such alterations may occur without the bronzing of the skin or the other symptoms.

In the obscurity in which the whole question is involved we are naturally led to inquire whether, having established the fact that an imperfect perform-

* Abercrombie, 'On Diseases of the Stomach,' p. 387.

ance of the functions of the stomach is capable of producing fatal anæmia, we may not discover an explanation of the symptoms of Addison's disease in some coexisting change in the gastro-intestinal canal. That a morbid condition of the mucous membrane is often present there is abundance of proof. Dr Hodgkin, in reporting on a case attended by Dr Addison himself, described the stomach as showing "a peculiarity of its appearance, which consisted in a spotted character not very easily described. Near the pylorus it seemed to consist of a very slight degree of that irregularity which Louis has described as the *état mamelonné*, and which appears to be nothing more than the increased development of a natural structure, but in this instance the elevations were smaller in size, and consequently more numerous, though less prominent, than those generally seen towards the middle of the stomach, where this appearance is most frequently noticed. Further from the pylorus, in the direction of the smaller curvature, smaller spots were seen more scattered and distant from each other, and apparently consisting of opaque light-coloured matter within the semitransparent substance of the mucous membrane itself, which was generally of a faint dusky-reddish colour."

This appearance I have myself seen in cases of Addison's disease, and Dr Greenhow, in his description of a case, states "that at the cardiac extremity there was considerable vascular injection at the point of termination of the œsophageal epithelium; just below that point were a number of minute elevations

or granulations most abundant in the smaller curvature." In the microscopical appearances of a vertical section through the mammillated mucous membrane he states "that the mucosa was infiltrated with small round cells like lymph-cells. The surface of the epithelium is wanting, and the gastric tubules are shrunken and atrophied."*

Enlargement of the solitary glands of the small intestines has been also very frequently found as an accompaniment of the disease of the suprarenal capsules. In one instance, carefully described by Dr Aitken, it is stated "that the stomach and glandular substance of the intestinal tube were uniformly thin throughout. In the stomach the solitary gastric glands were remarkably prominent, whilst the mucous membrane generally was wasted and atrophied. Microscopic sections from the jejunum and ileum showed the villi remarkably attenuated, and the mucous membrane very readily separated from the adjacent muscular part of the gut. The tubular glands of the mucous membrane of various parts examined were almost entirely gone, and their places supplied by granular amorphous material. The average specific gravity of the mucous membrane of the intestines was 1·040."†

From the observations of Dr Aitken it might be suspected that atrophy of the stomach was a common accompaniment of this disorder. Such is, however,

* 'On Addison's Disease.' By Edward Headlam Greenhow, M.D., F.R.S.

† 'The Science and Practice of Medicine.' By Dr. Aitken. Fifth edition.

not the fact, for I examined very carefully with the microscope the gastric tubules in a typical instance of Addison's disease and found them neither reduced in size nor altered in appearance.

But, it may be asked, what is the cause of the enlargement of the solitary glands of the stomach and intestines so constantly found in this disorder? Under ordinary circumstances, when associated with an increased secretion of mucus, this condition indicates chronic inflammation of the mucous membrane, for an increase in the number and size of these bodies is observed in every case of severe gastric catarrh, and they are most common towards the pyloric end of the organ. Thus, when speaking of acute catarrh of the stomach, Dr Wilson Fox remarks: "Coincidently with these changes there is a considerable increase in size, if not in number, of the solitary and lenticular glands, which then appear as small white specks, varying in size from that of a poppy to a millet-seed, thickly scattered over the surface. They are most abundant in the pyloric portion of the stomach, and also in the duodenum. A considerable thickening of the intestinal tissue simultaneously occurs, owing to its becoming infiltrated with cell-structures, similar to the lymphatic elements existing throughout the intestine. They are embedded in an alveolar network, but are not separated by any distinct line of demarcation from the tubular structures around, which are sometimes widely separated and more or less obscured by this growth."*

* 'Diseases of the Stomach.' By Dr. Wilson Fox. p. 114.

Although, then, gastric atrophy does not necessarily accompany Addison's disease, there can be no doubt that many of the symptoms of the latter malady are the result of the chronic catarrh of the gastro-intestinal tract, which is so constantly associated with it. The attacks of vomiting that form one of the earliest and most striking symptoms find their explanation in this condition. So likewise do the flatulence, distension after food, and cardialgia, which, though not so invariably present as vomiting, yet occur in most of the cases that come beneath our notice. The want of appetite that accompanies the other signs of disturbance of the digestive process is probably also a consequence of the same morbid state. This is, however, rarely manifested to the same extent as in atrophy of the stomach, in which, in the later stages of the disease, the anorexia often amounts to a positive disgust for all food. Diarrhœa is another prominent symptom of Addison's disease; in the earlier stages it often alternates with constipation, but becomes more constant towards the termination of the case.

If, however, chronic inflammation of the mucous membrane of the digestive tract is so invariably present, it is interesting to inquire how its occurrence can be accounted for. It is generally admitted that the nerves in the vicinity of the suprarenal capsules are matted together or disorganised, and their functions must be, therefore, seriously interfered with. Now, it is stated by physiologists that one of the consequences of the section of a sympathetic nerve is the

dilatation of the vessels of the part to which it is distributed, and we can, therefore, see that the morbid state of the nerves and ganglia of the stomach and intestines will be apt, if our present physiological doctrines be correct, to give rise to permanent catarrh of these structures.

The other phenomena of the disease seem to lend support to the above theory. A dark colour of the tissues, which is generally looked upon as a characteristic sign of this malady, occurs in various other disorders, although it is less observable in them, probably because the longer duration of Addison's disease affords more time for the deposition of the pigment in the skin. Thus, in certain forms of cancer, in fever, and especially in intermittent fever, the conversion of the hæmatin of the blood into a dark brown or black substance is not unfrequently remarked. In malarial fevers, in which it has been most carefully studied, it is believed to result from the frequent attacks of congestion of the spleen and liver that so generally accompany them. We may reasonably suppose that the bronzing in Addison's disease may arise from a similar cause, and we can readily account for the congestion of the spleen and liver producing it, on the supposition that the disorganisation of the nerves produces dilatation of the vessels of these organs as well as of those of the mucous membrane of the digestive tract.

The failure of the heart, which is also a prominent symptom of Addison's disease, seems susceptible of a similar explanation, and we are thus led to the con-

clusion, which has been accepted by so many eminent investigators, that death is not the result of an interference with the functions of the supra-renal bodies, but that it arises from the destruction of the numerous and important nerves that are situated in their vicinity.

CHAPTER IV

ATROPHY OF THE STOMACH IN PERSONS AFFECTED WITH CANCER OF VARIOUS ORGANS

Cases of pernicious anæmia are rare, and, in all probability, only a small number of them is due to atrophy of the gastric glands. In examining the stomach in various cases I was struck with the frequency with which atrophy presented itself in persons who had died of cancer of the breast, and in order to show this I have included in the following observations all the cases of death from this disease that have come beneath my notice, and which I had the opportunity of observing with the microscope.

Observation 1.—A woman, aged sixty-two, died of cancer of the breast. The mucous membrane of the stomach was everywhere thin, especially along the smaller curvature; it was smooth and much injected in patches. Along the greater curvature it was rather thicker, adherent firmly to the subjacent coat, and mammillated. In this part the tubes were united together, and the spaces between and below them were loaded with nuclei and cells, nuclei being also everywhere visible in the muscular coat. The solitary

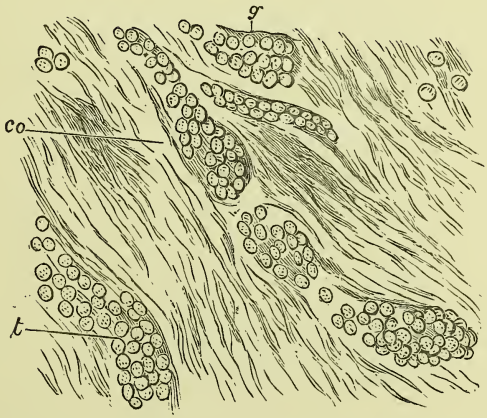
glands were greatly enlarged, and mostly empty in their centres, but at their edges they presented thick layers of cells and nuclei. In the more wasted parts of the mucous membrane the remains of the tubes appeared as bulbs, or as irregularly shaped masses of fat and broken-up gastric cells, or as lines of fatty matter so small as to resemble blood-vessels, whilst their interspaces were occupied by fatty and molecular material. In some places no remains of the solitary glands could be perceived, in others small cavities surrounded by thin layers of nuclei and cells marked their former positions. The muscular coat seemed to consist of little else than fibres. The duodenum was large, but to the naked eye showed no appearance of disease. Examined microscopically, Brunner's glands were seen to be enlarged and loaded with nuclei and fatty cells. The intestinal villi were normal.

Observation 2.—A woman, aged thirty-seven, died of cancer of the breast. The mucous membrane of the stomach was very thin and much congested in parts. At the cardiac end, it was everywhere sprinkled over with small white spots, about the size of a pin's head, that looked, but did not feel, as if raised above the surface. At this part the membrane was converted into fibrous tissue, fat, and granular matter, whilst the tubes had disappeared or their remains only could be recognised as faint lines. The muscular tissue was thickened and fibrous, and the blood-vessels seemed very large, and in many cases thickened and opaque. In a small portion of

the organ the tubes could be distinguished, but they were firmly adherent to each other, and were filled with granular matter and a few large gastric cells.

Observation 3.—A woman, aged forty-three, died of cancer of the breast. In one part of the middle region of the stomach, the mucous membrane seemed hard and fibrous. The solitary glands were in some parts enlarged and the tubes distorted or withered; but in others, although the solitary glands were not apparent, the tubules were firmly adherent to each other, their basement membrane was thickened, and the connec-

Fig. 8.



Gastric tubes in process of being transformed into fibres.

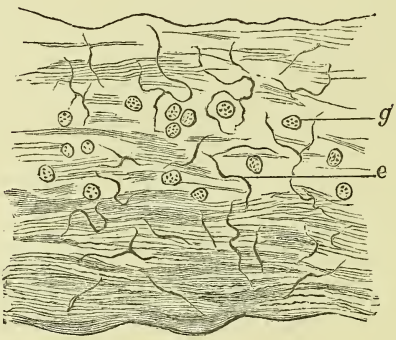
t. Tubes drawn from their natural position and altered in shape.
co. Fibrous tissue between and below the tubes.
g. Cells in the tubes.

tive tissue between them and the muscular coat very greatly increased (see Fig. 8). The openings of the tubes on the free surface were larger than usual.

Observation 4.—A woman, age unknown, died of cancer of the breast. No post-mortem digestion had taken place. In the cardiac region the tubes were greatly wasted, and for the most part their closed ends only remained. They were firmly united in every other part of the stomach, their interspaces being occupied by nuclei. The conversion of tubes into bundles of fibres was observable at many points.

Observation 5.—A woman, age unknown, died of cancer of the breast. In the smaller curvature of the stomach no indication of tubes existed, excepting here and there a bulb surrounded by thick fibres, the whole of the structure being composed of cells, nuclei,

Fig. 9.



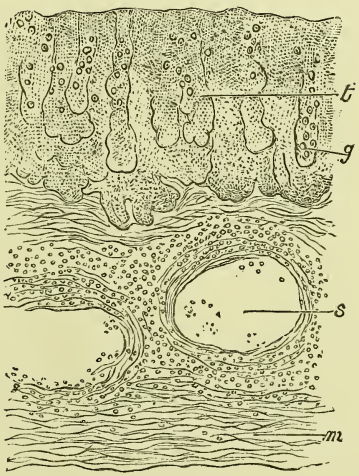
Gastric mucous membrane changed into fibres.
g. A few scattered cells.
e. Elastic fibres.

and fibres (see Fig. 9). In the cardiac region the tubes were in a similar condition. The solitary glands were in many places very large, and loaded with cells and nuclei.

Observation 6.—A woman, aged sixty-three, died of cancer of the breast. The stomach contained torulæ in large quantities. The mucous membrane was remarkably thin, but much congested; along the lesser curvature were patches of a white opaque appearance. The tubes could be easily recognised, but contained only small cells; between and below the tubes the spaces were loaded with nuclei.

Observation 7.—A woman, aged sixty-three, died of cancer of the breast. The stomach was extremely thin everywhere, but especially so in the cardiac region,

Fig. 10.



s. Enlarged solitary glands.
t. Remains of the gastric tubes.
g. A few cells still remaining.
m. Muscular layer.

which was not digested. A broad band of dense white tissue ran along the smaller curvature for two thirds

of its length; excepting this, the middle and pyloric regions were of a dark grey colour. The tubes could be distinguished in some parts of the cardiac region, but were united together, whilst in other places they were converted into bundles of fibres. In the white band no remains of tubes were visible, the whole tissue appearing to consist of fibres and granular and fatty matters. In the grey parts the tubes were firmly adherent, and intermixed with cells and nuclei. The solitary glands were much enlarged, and filled with cells and nuclei (see Fig. 10).

Observation 8.—A woman, aged sixty, died of cancer of the breast. The mucous membrane of the stomach was exceedingly thin and pale, but not digested. Towards the cardiac end the remains of the tubes appeared only as confused masses of fat and granular matter, and the whole membrane seemed opaque and granular. In other parts the tubes were firmly connected together, and their basement membranes thickened, whilst within and around them were cells and nuclei from $\frac{1}{3000}$ to $\frac{1}{4000}$ of an inch in diameter. Few normal gastric cells could be seen, but the solitary glands were greatly enlarged and filled with cells and nuclei.

Observation 9.—A woman, aged seventy-five, died of cancer of the breast. The mucous membrane of the stomach was not atrophied, but the tubes were adherent to each other, their interspaces being occupied by nuclei and cells. The tubes contained gastric cells, generally of a small size.

In all the above cases the appearances were similar. Except in Observation 9, the mucous membrane was much wasted, chiefly at the smaller curvature and in the splenic region; in one instance, in which it was congested in irregularly-shaped patches, and the veins were of large size, it only weighed 360 grains. When examined by the microscope they all presented morbid changes, which were most perceptible where the membrane was thinnest. In the earliest stage of the disease the solitary glands were enlarged and filled with cells and nuclei, which were also scattered everywhere through the membrane; the gastric tubes, and sometimes the muscular fibres, were displaced by these bodies, the tubes adhered firmly to each other, but still contained some normal gastric cells (see Fig. 10). At a later period the solitary glands appeared empty in the centre, but were surrounded by thick layers of nuclei; the tubes could no longer be traced in their whole extent, but could be recognised only as bulbs filled with fatty cells, or as lines of cells, whilst the whole tissue was obscured by fatty and granular matter. In the last stage the solitary glands had disappeared, and the tubes were replaced by fibres, the alteration of glandular structure into fibre being the ultimate metamorphosis (see Fig. 9).

These anatomical changes seem to have produced a diminution of functional power. Post-mortem digestion seldom occurred even in the summer, and in one case, in which I digested ten grains of albumen for eleven hours in an acidulated infusion of the

mucous membrane, only six tenths of a grain were dissolved.

In the next cases, although the solitary glands were not enlarged, the structure of the stomach was seriously injured by an increased formation of fibrous tissue.

Observation 10.—A woman, aged fifty-six, died of cancer of the breast. The mucous membrane of the stomach was exceedingly thin. At the great curvature was an irregularly-shaped, puckered patch of thin membrane, about three inches long by one in width, and from this fibrous bands projected in different directions, but these were not so well marked as is usual in a cicatrized ulcer; there was no change in the shape of the stomach. At the puckered part the surface was pale, but on every side it was greatly congested. Where most contracted the mucous membrane seemed to be converted into a very thin layer of fibres, intermixed with a few cells; in other places the tubes appeared to be drawn into a longitudinal direction, and were in process of conversion into fibres, the cells being absent and the thickened basement membranes constituting the fibrous bundles. Along the smaller curvature the tubes were easily distinguished, filled with gastric cells, but adherent to each other, their basement membrane being much thickened, and the connective tissue below and between them greatly increased.

It might appear doubtful whether the appearances in Observation 10 were not caused by the cicatrix of

an ulcer, but the great extent of the contraction without alteration in the shape of the stomach itself seems to show this was not the case. Degeneration was in progress in all parts of the organ, and in cases of simple ulcer of the mucous membrane I have not usually found much structural alteration at a distance from the part affected.

Observation 11.—A woman, aged fifty-five, died of cancer of the breast. The mucous membrane of the stomach was very thin, but not digested. In the middle and splenic regions the tubes could be distinguished, but they were firmly adherent to each other; their basement membrane was much thickened, and they contained large fatty gastric cells; the solitary glands were not enlarged. The connective tissue below them was greatly increased, and the muscular coat seemed fibrous.

Although I did not detect any enlarged solitary glands in the two foregoing cases, nuclei were everywhere dispersed in Observation 10, whilst in Observation 11 there were scattered nuclei in the cardiac and middle regions.

In both of these cases the mucous membrane was very thin; in Observation 11 twenty grains of it carefully dried were digested in ether, and lost 32·8 per cent. in weight. But, as the average amount removed by ether in five cases dying of other diseases was only 12·6 per cent., it is evident that in the case just narrated a considerable amount of fatty degeneration must have taken place.

Eleven grains of solid albumen were digested in an acidulated infusion of the mucous membrane of Observation 11 for twelve hours, and, although the albumen became softened and translucent at the edges, it gained one grain in weight. As the average loss of albumen in similar experiments on cases dying of other diseases amounts to four grains, it is plain that the functional activity of the stomach had been greatly diminished.

In the next four cases atrophy of the gastric tubes could not be observed by the microscope.

Observation 12.—A woman, aged sixty, died of cancer of the breast. The mucous membrane of the stomach was remarkably thin. The tubes were distinct and readily separated, but were loaded with granules and fatty epithelium.

Observation 13.—A woman, aged fifty, died of cancer of the breast. The mucous membrane was very thin, weighing only three and a half drachms. Torulæ existed in great numbers in the contents of the stomach. The tubes could be easily separated, but were chiefly filled with granular matter.

Observation 14.—A woman, aged forty-nine, died of cancer of the breast. The stomach was quite undigested, although that of another person who died the same day of another disease was softened to a great extent. The mucous membrane was everywhere very thin, and the blood-vessels were greatly enlarged. The tubes seemed healthy, and contained

cells. The duodenum was very granular, and Brunner's glands were increased in size.

Observation 15.—A woman, aged fifty-nine, died of cancer of the breast. The stomach was deeply congested, and the veins were very large. The tubes could be easily separated, but the gastric cells were large and fatty, breaking down with the slightest pressure.

In none of the four last cases was there any microscopic evidence of atrophy of the stomach, there was, however, an unusual softness of the gastric cells and an increased amount of granular matter, and in Observation 14 the duodenum was very granular, and the vessels of the stomach large and injected. Although three of them presented the usual thinness of the mucous membrane, in Observation 15 it was nearly the average weight, viz. 720 grains. In one case ether removed 19·1 per cent., showing that some amount of fatty degeneration had taken place. In two cases, in which artificial digestion was tried, there was a mean loss of 4·8 grains of albumen; so that, as far as the pepsin was concerned, there was no deficiency of functional power.

It will be remarked that the state of the pyloric region has not been mentioned in the foregoing cases. All reference to it has been omitted on account of the frequency with which this part of the stomach presents morbid changes, especially at and after middle life.

But, it may be asked, if atrophy of the pyloric region so constantly exists, apparently without any

constitutional affection arising therefrom, are we justified in supposing that a similar condition of the splenic and middle regions would produce more serious results? I think a consideration of the comparative extent and functional activity of these different parts will enable us to decide the question. In nineteen cases of death from other diseases than cancer, I found the average weight of the mucous membrane of the middle and splenic regions to be thirteen drachms, whilst that of the pyloric only amounted to two drachms. In seventeen instances artificial digestion was tried with the mucous membrane taken from each region; the average amount of albumen dissolved by two drachms of the pyloric was only 1·4 grain, whilst that dissolved by an equal quantity of the other regions was 3·1 grains. In bulk, therefore, the pyloric region constituted only one seventh of the whole membrane, and the material of which it was composed had little more than one third of the digestive power of the more active portions of the organ.

The proportion of these parts also varies according to the age of the individual; thus, of five persons who had died under twenty-five years of age the pyloric formed only 11·9 per cent. of the whole mucous membrane, whilst of fourteen above that time of life it amounted to 16·4 per cent. We may, therefore, conclude that when the growth of the body is fully completed the pyloric region normally undergoes some alteration of structure, and thus the anatomical changes so frequently found in it cannot be expected to affect the nutrition of the body.

We have found in a previous chapter that atrophy of the stomach when extensive is accompanied by a gradual diminution in the volume of the blood, and by the symptoms resulting from anæmia. The question, therefore, arises whether this condition, when it coexists with cancer of the breast, produces a similar effect upon the general health.

It would seem almost unnecessary to remind my readers that anæmia is one of the most marked accompaniments of all forms of malignant disease, and that the "cachexia" upon which practical writers so much insist arises chiefly from the diminished volume of the blood. On the other hand, it may be said that anæmia rarely occurs in the early stages of mammary cancer, and that, on the contrary, many of those affected with it present at the outset no appearance of illness; whilst in the later stages we often meet with extensive ulceration of the breast, attended by a purulent or bloody discharge, or with secondary changes in other important organs, either of which conditions will suffice to account for the cachexia. In answer to the first objection I may remark that atrophy of the stomach is rarely present to any great extent in the early stage of mammary cancer. It is in the very chronic forms that we meet the most striking examples of destruction of the secreting tubes, and consequently we could scarcely expect to discover any great deficiency of blood at this period.

There would perhaps have been no great difficulty in determining how much of the cachexia was in each of the above-mentioned cases dependent on the con-

dition of the stomach, if we had possessed the history of the patients and been acquainted with the amount of discharge from which they had suffered, and whether other organs had become the seat of malignant growths. But, unfortunately, mammary cancer is so entirely a surgical malady that none of them were seen by me during their lifetime, and consequently I am unable to afford the necessary information.

In the two following cases of cancer of the breast anæmia was most marked, although ulceration was not present, and no other important organs seemed to have been implicated. Unfortunately, no post-mortem examination could be obtained.

Case 9.—I was requested to see a lady, about sixty-five years of age, whose health had been gradually failing for some time. She was confined to her bed when I saw her on account of her extreme debility. She had no pain, but she suffered from excessive weakness. She was very stout, and remarkably anæmic, the lips and throat were bloodless, and the skin was like wax. She had constant thirst, but no appetite for food. I carefully examined all the internal organs, but was unable to detect any disease in them, and the urine was free from albumen and sugar. Three other physicians, who had been previously consulted, had been equally unable to find evidence of disease in any part of the body. There were, however, a few hard nodules scattered over the chest, which had appeared some weeks before I saw her.

Thirteen years before she had noticed a small hard tumour in the breast, for which very little treatment had been adopted for ten years. It then became painful, was removed by operation, and proved to be of a cancerous nature. The wound soon healed, and no recurrence had taken place, either in the site of the operation or in the glands of the axilla, but she gradually lost strength and colour, and at the same time became stouter. The next year she suffered from "rheumatic gout," and had frequent "bilious attacks." The appetite gradually failed, and after an attack of vomiting that lasted for a whole week her strength rapidly declined. I diagnosed the case as one of atrophy of the stomach, and gave a very unfavorable prognosis. She died a week or two afterwards, but, unfortunately, no post-mortem examination was obtained.

Case 10.—A lady, forty years of age, consulted me on account of dyspepsia. She stated that four months previously a cancerous tumour had been discovered in the breast, which had been removed by operation. The wound rapidly healed, but she had felt weak and feeble ever since. Her appetite was exceedingly bad, as regards beef or mutton, but she could take with relish either fowl or fish, vegetables or farinaceous food. The bowels were regular, and the catamenia rather too frequent. She was anæmic, but the blood seemed to be normal when examined by the microscope.

I saw her from time to time for the next three years. The appetite became gradually worse, until it was with

the greatest difficulty she could be persuaded to take any nourishment. In fact, she refused all solid animal food, and life was maintained upon milk, soup, and farinaceous materials. She said she never felt the sensation of hunger, and she loathed the thought of food. She complained much of flatulence, but had no pain. The spirits were greatly depressed, and the memory very defective; nevertheless she gained nearly two stones in weight. During this period the tumour had reappeared to a slight extent in the cicatrix, and had been removed by operation. Small nodules were scattered over the skin of the chest and neck, but no implication of any of the internal organs could be detected.

I lost sight of her, but I afterwards learned that she became gradually more feeble, and died about three years after the commencement of her illness.

Although I was unable, in the above cases, to obtain any confirmation of the diagnosis by post-mortem examination, I think the presence of gastric atrophy in both was, to say the least, very probable. In the first the appearance of intense anæmia was most striking, without any apparent cause to account for it, and in the second, although the duration of the disease was longer, and the bloodlessness less marked than in the cases described in Chapter II; nevertheless, the gradual loss of appetite for animal food, along with an increase in the weight of the body, seem to point strongly to the stomach as the seat of mischief.

Atrophy of the stomach is, however, not confined to

cases of cancer of the breast; it shows itself where other organs are the seat of malignant disease. In scirrhus of the pylorus I have always found degeneration of the gastric glands extending to a considerable distance from the seat of the tumour, whilst in simple ulceration of the stomach the tubes appear to be normal within a very short distance from the edge of the sore. May not this affection of the glandular structure partly account for the cachexia which is so marked a feature in scirrhus, but which rarely occurs in simple ulceration, and which is seen in cases of malignant disease in which there has been neither profuse bleeding, long-continued discharge, or implication of other organs?

It is scarcely possible to refrain from inquiring what connection exists between the malignant growth in the breast and the atrophy of the stomach. Have we here stumbled upon the cause of cancer; is the tumour the result of some alteration of the digestive process that has introduced into the system an albuminous material in a state of imperfect elaboration? However specious such a theory may appear, it is obviously an incorrect one, for the following reasons.

The amount of atrophy of the stomach was greater in the cases of "pernicious anæmia" mentioned in Chapter II than in any of the observations above recorded, and yet there was in the former no malignant tumour in any organ of the body. Again, if the cancer were dependent upon the state of the stomach, we should expect the atrophy to be developed to a considerable degree before the breast presented evi-

dence of disease. This, however, was not so, for where death occurred shortly after an operation performed at an early period, the changes in the gastric membrane were usually much less than in the older cases. Lastly, we might suppose that where the gastric atrophy was greatest the malignant growth would be most apt to recur after its removal; but, on the contrary, where the atrophy was most pronounced an operation had often not been followed by a return of the local malady.

But if the cancer is not the result of the fibroid degeneration of the stomach, may not the latter be produced by the former? In scirrhus the glands are, as a rule, early affected, and we could suppose that a material thus introduced into the system from the tumour might inundate the tissues, and lead to a superabundant formation of fibrous structures. In support of this hypothesis may be urged the fact that the blood in cancer of the breast generally contains an unusual proportion of fibrin, for if alcohol be added to it a very large, firm coagulum is produced, even when the strength of the patient has been long reduced by purulent discharge. Again, in some of the cases, where the small intestines were examined, appearances very similar to those of the stomach were remarked, in others the hepatic cells were more closely united together than in the normal condition, and the fibres of the unstriped muscles were often unusually distinct, and their nuclei remarkably large and prominent.

But, on the other hand, there was no relation

between the amount of the disease in the breast and the indications of a general fibroid change; indeed, in one case the atrophy of the stomach had proceeded to a great extent where the tumour had been removed by operation at an early period, and where there had been only a slight recurrence of the malignant disease.

But if neither of the above hypotheses can be supported, there only remains the supposition that the scirrhus and the fibroid degeneration of the stomach and intestines both result from a common cause.

It is scarcely necessary to remark that every structure selects from the blood such of its constituents as are best fitted to support its growth and afford materials for the performance of its functions, and that, in all probability, very complex changes are produced in the chemical and physical properties of the substances thus selected. For example, we know that the acids and colouring matters of the bile result from the activity of the hepatic, whilst pepsin and hydrochloric acid are produced by the gastric cells. In like manner, all the different tissues in the body must be continually at work, decomposing or transforming the liquor sanguinis in which they are bathed, and appropriating such of its constituents as are required for their nutrition. If, then, we find that the glands of the stomach or intestines have disappeared and are replaced by mere fibres, which are destitute of functional activity, a failure in the vital powers of these parts is plainly indicated.

In a similar manner scirrhus appears to be con-

nected with a failure in the functional power of the parts affected. Thus, it is most apt to take place in the decline of life, whilst it is rare in the earlier and more vigorous periods of existence, and it chiefly attacks those organs which, like the breast, uterus, and pyloric end of the stomach lose their functional activity before the general decay of the whole body has set in.

But although both scirrhus and fibroid degeneration occur in parts whose functional power is failing, and although they are so closely allied that in some cases it is almost impossible to determine to which a morbid structure belongs, yet the typical examples differ in a striking degree. In the latter we have a mere replacement of a tissue by one of a more simple character, whereas in the former an irritating substance is formed that is capable of producing a material similar to itself in the parts with which it comes into contact. If we might hazard a conjecture, we should say that fibroid degeneration is a mere diminution of the vital power of the part affected, whilst in scirrhus the local chemical changes are so *perverted* that an abnormal material is produced that acts as an irritant on the living structures. The irritating nature of this newly formed material seems to be shown by the inflammation excited around the edges of the tumour and in the glands through which it passes.

But if the local chemical changes are perverted by the diminution of the vital power we might anticipate that the lymph effused by the inflammation would also undergo some alteration. Such seems to be the case,

for in scirrhus the exudation that forms the tumour seems incapable of breaking up and being absorbed, as in ordinary inflammation; and it is abnormally contractile, as is proved by the retraction of the nipple of the breast and the narrowing of any canal that has been invaded.

It is generally assumed that a scirrhous tumour is of slow growth, and that when first discovered it must have existed for some time previously. But I suspect this is an incorrect view of the case, for it is quite possible that the lump may only just have been produced by a process akin to ordinary inflammation. The following case will perhaps in some degree justify this conclusion:

Case 11.—A lady, about fifty years of age, who was sure she had no tumour in the breasts, as, from a fear of cancer, she was in the habit of frequently feeling them, received a severe blow on one of them from a ball. I saw her a few days afterwards, and found the skin discoloured by effused blood, and the whole mamma somewhat swollen and tender, but there was no defined tumour to be felt. In two or three weeks' time the discolouration had disappeared, the general enlargement had lessened, but there was one part in the centre more hard and solid than the rest. In the course of a few weeks more the edge became more defined, the swelling increased in solidity, and gradually assumed the ordinary appearance of scirrhus. The breast was removed by operation; the tumour presented the usual cha-

racters of scirrhus, it recurred within two years, and the patient died of the disease.

Now, in this case there was no tumour before the accident, and the cancer seemed to be developed out of the exudation. In other words, one part of the lymph, instead of growing soft and capable of absorption, became more solid, and contracted into a distinct mass, and along with this change an irritating material was produced, capable, as are so many animal substances, of acting as an irritant upon the other structures of the body, and producing in them an alteration of the tissue similar to itself.

I would suggest that the most useful direction for future investigations would be to ascertain from the examination of *recent* cases of scirrhus how the lymph differs from that resulting from ordinary inflammation. I have attempted to do this by boiling specimens in acetic and lactic acids, and by soaking sections in cyanide of potassium, sulphocyanide of potash, and other solvents, but the results obtained were not such as to warrant any trustworthy conclusion.

If, as we have found, scirrhus, which is mainly composed of fibres, generally coexists with fibroid degeneration of the stomach, we should not expect to meet with a similar condition in the more cellular forms of malignant disease. This appears to be the case, for in cancers affecting most of the other organs we do not meet with gastric atrophy in the same proportion as when the breast is the seat of the cancer. I have, in the following pages, brought

together the results of the examinations I have made of the digestive tube in persons who have died from malignant tumours of various other organs.

In only three out of twenty-four cases of cancer of the uterus was there any serious change in the mucous membrane of the stomach similar to that described as so often occurring where the disease had affected the breast. These three exceptions were as follows:

Observation 16.—A woman died of uterine cancer. One part of the mucous membrane of the middle region showed no remains of gastric tubes, the whole tissue being white, opaque, and loaded with nuclei. In another part the tubes could be distinguished, but they were firmly united together, their basement membranes being much thickened, and the spaces between and below them loaded with nuclei.

Observation 17.—A woman, aged thirty, died of cancer of the uterus. A large hard ulceration, which showed no appearance of cancer, was found in the middle region near the pylorus. In the splenic region the mucous membrane contained only a few bulbs, as the remains of gastric tubes; the solitary glands were enlarged, and the whole tissue was loaded with cells and nuclei.

In another case there was a large hard patch of thickened tissue, like the cicatrix of an old ulcer, and

the secreting tubules in every part of the organ were much diseased.

In five other cases the anatomical condition was of a different character; the tubes were easily distinguished, but were very soft, they adhered to each other and to the muscular layer by very fine fibres, and they usually contained transparent cells. The blood-vessels were generally congested, and the surface of the membrane was covered by a considerable quantity of mucus. From the fact that inflammation between the gastric tubes usually terminates in other cases in their adhesion to each other, and from the congestion of the blood-vessels, I suspect the above cases to be of the same nature as those next to be described, excepting that chronic inflammation had taken place in them.

In sixteen cases the anatomical characters were as follows:—The tubes could be readily separated from each other, but their basement membranes were exceedingly thin; they contained gastric cells, more transparent than usual, breaking down into granular matter with very slight pressure. The mucous membrane was but little diminished in bulk, the average of three cases being 660 grains; it was very pale, but this, I think, was not entirely to be attributed to the discharges produced by the local disease, for in cases in which the connective tissue was increased it did not exist to the same extent. In some instances the tubes seemed bathed in an albuminous fluid; in others the membrane cut as if gelatinous, and in but few instances did spirit or chromic acid harden

it, as is the case in its normal condition. The chemical composition likewise varied; in one case the softness seemed to be connected with an increased deposition of fat to the extent of 33·5 per cent. of the entire substance; in another there was nearly 50 per cent. of albumen; whilst in a third, with a small proportion of fat and albumen, there was a large excess of gelatine. It is difficult to estimate the effect these changes had produced upon the function of the organ. Post-mortem solution was not common, but I have met with it in a few cases, and chiefly, I think, in those in which the change in the membrane was of a fatty character. In nine cases artificial digestion was tried, and in one 3·7 grains of albumen were dissolved; in the remaining eight, although the albumen was softened, no loss of weight had taken place.

Whether, therefore, we refer the loss of pepsin to the alterations of structure or to the anæmia consequent on the cancer, there can be no doubt that during life digestion must have been imperfectly performed.

The remaining cases of cancer in which the condition of the stomach was carefully examined are grouped in the following table, according to the site of the cancer:

Cancer of other parts than the breast or uterus.

	Sex.	Age.	Condition of stomach.
Cancer of tongue...	Male	50	Enlarged solitary glands; tubes united, and in places atrophied.
	Male	...	Enlarged solitary glands; tubes united; large perforating ulcer.
	Male	...	Tubes normal.
Cancer of rectum...	Female	54	Tubes united by fine membrane.
	Male	26	Enlarged solitary glands; tubes diseased.
Cancer of groin, penis, and bladder	Male	...	Great thickening of connective tissue, with adhesion of tubes.
	Male	72	Tubes normal.
	Male	50	Tubes normal.
Cancer of glands, bones, skin, and lungs	Male	71	Tubes normal.
	Female	59	Tubes normal.
	Female	...	Tubes normal.
	Male	82	Tubes normal.
	Male	...	Tubes normal; connective tissue increased.
	Female	45	Enlarged solitary glands; adhesion of tubes.
	Male	29	Tubes normal.
	Male	43	Tubes normal.

I have mentioned a case (Observation 17), in which a large ulceration had formed in the stomach in a person suffering from cancer of the uterus, and it will be observed that a similar lesion occurred in a patient affected with malignant disease of the tongue. In both, the connective tissue below the muscular coat was greatly thickened, and this condition was also present in a case of cancer of the bladder, in which, although no ulceration had taken place, pus-cells were found in the mucous membrane.

The group in which atrophy of the stomach was most rare is that composed of cancerous affections of the skin, bones, and lymphatic glands.

In some cases of diseased uterus, fatty degeneration of the mucous membrane of the intestines was present. But the most common morbid appearance was a dark condition of the villi; indeed, in only three out of seventeen cases where no disease of the stomach existed was this change absent, but where the stomach was atrophied or the villi were loaded with nuclei it did not present itself except to a small extent in one case; in two out of the three exceptions the mucous membrane was in a soft fatty condition. To the naked eye the surface of the duodenum appeared in some of a uniform dark hue, whilst in others the colour was more intense, and the villi could be readily distinguished as minute black spots. When examined by the microscope, they were seen to be loaded with dark cells and nuclei, which were in greatest numbers at the free ends, but often extended the whole length. In some instances the villi were universally coloured by dark spots of an irregular form; occasionally they contained a fine, dark, granular matter, and in two or three instances I detected minute crystals in their interior.

I need not add that this dark appearance of the villi is not peculiar to cancer; it has been described by others as occurring in different diseases. I have met with it chiefly in fevers, but as I have never found it in persons killed by accidents, and once only in upwards of 100 dissections of wild animals, we may

assume that it indicates a morbid state of the intestine or of the blood.

But anatomical changes are not confined to the digestive canal in the softer forms of cancer. I have often found the muscular structure of the heart in a state of degeneration. The fibres in such cases are very soft, their markings are faint, or in some instances have entirely disappeared, and the whole tissue is loaded with fat-globules or granular matter. I suspect that the material present in the muscle is not merely fat, for in some I was able to obtain from it with boiling alcohol a substance containing lime.

The blood also differs from that of persons suffering from scirrhus of the breast. It coagulates slowly and imperfectly when mixed with alcohol, and seems to contain an unusual amount of fat.

The question here arises whether these changes in the various structures are the result of a coexisting degeneration, or are produced by the action of the malignant disease upon the system. From analogy with what we have seen to be probably the case in scirrhus it is, I think, likely that, to a certain extent, we may look upon them as arising from a general degeneration. But the alterations in the blood and the muscular structure of the heart are as easily explained on the supposition that they result from the drain upon the fluids of the body by the rapid growth of the tumour, and the injury caused by the absorption of disintegrating portions of it.

In must be borne in mind that I have almost entirely limited my search to the digestive canal, but if a

minute inquiry were pursued into the state of the other organs it is probable that analogous changes would be discovered in them also.

I have said that the local peculiarities of scirrhus might be explained by supposing that from a perversion of the vital powers of the part, the lymph effused by an inflammatory process was modified in its chemical or physical properties, and that it possessed a greater amount of contractile power and less capability of becoming softened and absorbed than under normal conditions. Such a supposition will not explain the occurrence of the more cellular forms of malignant disease. In these the increase takes place by the growth of the individual cells, not by the exudation of lymph, and the question therefore arises, why should cells be formed, not very dissimilar in appearance from those already existing in the body, but possessed of such a force that they attract to themselves the circulating fluid, and thereby starve the normal tissues? In searching for an explanation of this phenomenon the following experiment was performed:

A portion of a large and quickly-growing recurrent tumour of the breast was boiled in acetic acid. With the exception of a few fibres it quickly dissolved. The fluid was filtered and evaporated to dryness; it was then mixed with distilled water and boiled, so as to separate the albumen. The fluid was again filtered and evaporated on a water bath, and the residue was placed beneath a bell glass, with a capsule containing sulphuric acid. It formed a brown-coloured mass,

whose attraction for water was so intense that it became damp if taken from beneath the glass even for a few minutes. It retained this power for many months, but at last its appearance changed, and it was converted into a dry chalky mass.

The attraction for water of many animal substances is well known, but I am not aware that any attempt has been made to show what influence this may have upon growth and secretion. It can be readily imagined that if, in disease, any cellular structure should contain a material possessing this property, an afflux of blood towards it would take place, and rapid and unusual growth would be excited.

I need not point out that these are mere speculations, and that, although the facts may be of value, they are so disjointed that no reliable conclusions can be based upon them. I ought to have ascertained whether in each case similar morbid changes were present, not only in the digestive canal, but in all the various other organs; and also whether there was any correspondence between the microscopical structure of the malignant growth and such general changes as might have been discovered. Unfortunately, I was working in the hope that I should find that cancer was the *indirect* result of some alteration in the digestive process, and it was not until I reviewed the facts I had brought together that I perceived such a theory must be abandoned.

Speculations, however, of this kind may be of value in directing other inquirers into new paths. Hitherto attention has been devoted almost exclusively to the

minute structure of cancers, and the microscope has been employed only to group together different varieties of malignant disease. Although from a pathological point of view such investigations have yielded results of great interest, they have not increased our power of preventing or removing these new growths. What we require to know, as practical men, is not *how* but *why* a tumour grows, and it appears to me we shall have a better chance of obtaining this information by examining the tissues apparently healthy than by directing attention to an organ from which all the normal structures have been eliminated by disease.

CHAPTER V

THE DIAGNOSIS AND TREATMENT OF ATROPHY OF THE STOMACH

As has been before mentioned, a limited amount of atrophy is as common in the mucous membrane of the stomach as in the kidney and other glandular organs. But so long as sufficient food is digested to meet the requirements of the body, no symptoms present themselves by which we can satisfy ourselves of its existence. As soon, however, as the supply of new material becomes insufficient to replace the daily loss of the tissues, anæmia is developed, and it is the diagnosis of this condition, when unattended by loss of flesh, which we have now to consider.

In most of the cases of severe and persistent anæmia the cause is sufficiently evident. When it arises from enlargement of the liver, spleen, or lymphatic glands, physical examination removes all doubts. In Addison's disease the discoloration of the skin and mucous membranes, and in kidney affections the analysis of the urine, directs us to the organs affected. In chlorosis, when this occurs, as it sometimes does, at a rather later age than usual, the good results of the exhibition of iron in restoring the colour and removing

the debility of the patient, render the diagnosis sufficiently easy.

But there are certain cases that, unless considerable care is taken, may produce no small amount of perplexity, and give rise to an erroneous diagnosis. For example, bleeding may be going on from an ulceration of the stomach or duodenum, where neither pain nor other symptom of disordered digestion has presented itself. In these instances, however, the bloodlessness takes place more rapidly than in gastric atrophy, it usually occurs in younger persons, and an examination of the fecal evacuations will show the pitchy appearance of blood altered by the digestive process.

Again, anæmia of a very marked character not unfrequently occurs in females, at or just after the cessation of menstruation, and is probably the result of that general decay of functional activity in the various organs that is apt to take place at this period of life. But here appropriate treatment seldom fails to remove the bloodlessness and restore the patient to her accustomed health.

In persons of middle and old age any severe loss of blood is often replaced with difficulty, the digestive and nutritive organs seeming to be incapable of the necessary increase of functional activity. This is more especially apt to occur in females in whom the volume of the blood is normally less than in the opposite sex. Unless this circumstance is carefully borne in mind mistakes are sure to arise.

But cases occur in which severe anæmia is the result

of hæmorrhage carefully concealed from the physician. The amount of bleeding need not be large in order to give rise to the appearance of extreme bloodlessness, if the patient be at an age when the circulating fluid is renewed with difficulty, or some circumstance, such as a defective state of the digestive organs or an insufficient supply of food, prevents the loss being quickly replaced. The following case is an illustration of this:

Case 12.—An unmarried female, sixty years of age, was admitted into the London Hospital under my care on account of severe headache, general feebleness, and incapability of mental or bodily exertion. She stated that she had been ill for many months, she had never suffered from hæmorrhage, but had been unfortunate in her business and been unable to provide herself with sufficient food. She presented the ordinary appearance of a person affected with pernicious anæmia. The skin and mucous membranes were excessively bloodless, she suffered from palpitation and dyspnœa on exertion, and a loud systolic murmur could be heard over the aorta. The appetite was very bad and she rapidly became more feeble. When in the hospital, she admitted to the registrar that she had latterly suffered from continuous discharge from the vagina, but as none was present when in the wards no examination of the uterus was made. Delirium came on, and she gradually sank from exhaustion. On post-mortem examination the various organs of the chest and abdomen appeared to be per-

fectly healthy, and a microscopic examination of the stomach proved that there was no atrophy of its secreting tubules. The brain was everywhere studded with minute specks of hæmorrhage, and it looked as if it had been sprinkled over with drops of blood. The uterus was large and contained a tumour, the surface of which was covered with clots of blood.

The explanation of this case seems obvious. On her admission into the hospital she had, probably from motives of delicacy, concealed the fact that she was suffering from hæmorrhage, and her want of appetite prevented her replacing the blood she had been losing. The defective nutrition of the coats of the smaller vessels gave rise to the cerebral hæmorrhages which appeared to be the immediate cause of her death. It shows how carefully the history of such cases should be scrutinised before they are placed in the list of pernicious anæmia, and how necessary it is that every organ should be searched when death occurs, before we conclude that it has resulted only from an alteration in the blood-making functions of the body.

Another group of cases of severe and persistent anæmia may be referred to previous injury inflicted upon the digestive tract by febrile or other acute diseases. Thus, it is occasionally observed following cholera and typhoid fever, but it should be remarked that the bloodlessness in such instances is not progressive as in gastric atrophy. The patient may continue anæmic for years after the cessation of the original

malady, but the feebleness and pallor do not increase month by month, as in the more fatal forms of anæmia.

It is scarcely necessary to remind my readers of the great bloodlessness that often results from malarial fevers. In such instances, the pallor of the skin may be out of all proportion to the frequency or severity of the febrile attacks, and it only disappears after appropriate treatment has been employed.

If having excluded the foregoing and other common causes of bloodlessness, we meet with well-marked and progressive anæmia in a man, at or past middle life, which has come on gradually, and steadily progressed in spite of appropriate treatment, which is accompanied by a persistent loss of appetite, especially by a distaste for animal food, and by severe flatulence and occasional vomiting, we are justified in suspecting the presence of chronic atrophy of the tubules of the stomach. It is more difficult to arrive at a conclusion in the case of females, as they seem less liable to this disorder; but if similar symptoms should manifest themselves in one who has suffered from cancer of the breast, the diagnosis of gastric atrophy would in all probability be correct.

Treatment.—As all the cases recorded have proved fatal it may be fairly asked whether there can be any expectation of benefit from medical treatment. It should, however, be borne in mind that, as at present we have no certain means of diagnosis, we can only prove a case to be one of gastric atrophy by post-mortem examination; and as slighter degrees of this affection are frequently discovered where death has

occurred from other maladies, we may reasonably suppose that its termination is not necessarily fatal. In support of this view I may state that I have seen patients recover whom I had diagnosed as suffering from this disorder.

Case 13.—A man, about sixty-five years of age, was admitted under my care into the London Hospital. He was extremely anæmic and feeble, his appetite was very bad, and he had been gradually losing strength for many months. The most careful search failed to discover any organic disease, and I had no doubt he was suffering from atrophy of the stomach. Nevertheless, he gradually improved under treatment, and left the hospital in a tolerable state of health, although still somewhat anæmic.

We have no specific against fibroid degeneration of any organ, and we must, therefore, as in the case of contracting kidney, to which this disease is analogous, direct our efforts to improve the general health, whilst we at the same time treat any complication that may be present. The anæmia as the prominent symptom at once arrests the attention of the practitioner, and all the means at his disposal are usually employed to remove it. Iron in some form is almost always prescribed from its power of increasing the number of the red blood-cells. It is also useful in diagnosis, for where it fails to relieve the anæmia it strengthens the suspicion that we have to deal with some serious defect of the blood-making structures. It

should be prescribed in such a form as is least likely to irritate the digestive organs, and the saccharated carbonate or the effervescing citrate of iron will often succeed where the stronger preparations fail. In gastric atrophy, however, iron is rarely of service, and in many cases it seems to lessen the appetite and disorder the digestion. I have used it subcutaneously in the hope that its direct introduction into the blood might be more useful but no good effects were produced.

Where iron fails arsenic should be given, especially if there is the least reason to suspect that the anæmia may have resulted from malaria. But even where this is not the case it is often extremely useful, the patient gaining colour and strength whilst he is taking it. It is a good plan to commence with small doses, such as three or four drops of the liquor arsenicalis after each meal, and gradually increase the quantity, until its specific action is manifested on the eyelids or digestive canal. As soon as this is the case the dose must be reduced, but the patient should be encouraged to persevere with the drug for a length of time.

Manganese or zinc may be substituted where iron does not agree, but they are both much inferior to it. Bismuth is frequently of service in allaying the attacks of vomiting to which the patient is subject, but I have never seen it of any value in removing the anæmia or improving the digestion.

As there is a deficiency of gastric juice in this disorder, it might be thought that pepsin and the

mineral acids would be useful as substitutes for the normal secretion of the stomach, but although I have tried them extensively, little permanent benefit has resulted from their employment. They often lessen the tendency to flatulence, but they do not appear to improve the anæmia, or increase the strength of the patient. I have been equally unsuccessful with the various kinds of concentrated food to which pepsin has been added for the purpose of increasing their digestibility.

The want of appetite necessarily suggests the employment of the vegetable bitters. Of course, where a malarial origin is suspected, bark and quinine should be used freely, but otherwise I have been disappointed with this class of remedies. The patients have usually appeared to be worse, the appetite has not improved, and the powers of digestion have been lessened by their exhibition.

As there is constipation in the earlier stages, purgatives have been generally employed. Even when these have acted mildly the strength has been reduced by them, and in no case has any benefit resulted. Salines especially should be avoided, as tending to diminish the volume of the blood. Where aperients are requisite a small dose of rhubarb or of the extract of aloes, or an enema will be found to be most suitable. I have never prescribed mercury, either as an aperient or to produce its constitutional effects.

The diet is always a question of great difficulty, and will severely tax the ingenuity as well as the patience

of the practitioner. So long as the patient is able to take animal food it is wise not to restrict his choice too closely, but permit him to eat anything that he fancies that is not particularly indigestible. When disgust for any article is manifested, some other kind of food should be substituted, or its appearance should be so altered by cooking that it cannot be recognised.

Fowls, fish, and soup are often taken with relish, long after beef and mutton have been rejected ; and milk, eggs, and farinaceous food are often acceptable to the patient when everything else is disliked.

Some form of alcoholic stimulant is generally useful, and may be given in moderate quantities in the earlier stages. Towards the termination of the case, however, wines and spirits are often productive of great distress, by increasing the palpitation and dyspnœa from which the patient suffers so severely.

I have attempted to maintain the volume of the blood by nutritive enemata, and have found them of great value. They may be composed of beef tea or milk, and the addition of a small quantity of brandy seems to increase their efficacy. They should not, however, be given too frequently, as diarrhœa is apt to occur in the later stages of the complaint. Transfusion of blood has been employed in some cases of pernicious anæmia, but hitherto without any good results. In atrophy of the stomach it is not required in the early stage, and could only be of temporary benefit towards the termination of the case.

Travelling, which is of such advantage in many forms of dyspepsia, should not be undertaken by per-

sons suffering from this disorder. The change from place to place, the mental excitement, and the frequent alterations of diet generally increase the debility. In the later stages, the removal for a few miles only may be enough to produce fatal exhaustion. Indeed, this seemed the immediate cause of death in one of the cases under my care.

ON THE

NERVOUS AFFECTIONS

OF THE

DIGESTIVE ORGANS

ON THE NERVOUS AFFECTIONS OF THE DIGESTIVE ORGANS

CHAPTER I

ON THE NERVOUS AFFECTIONS OF THE DIGESTIVE ORGANS

When we consider how extensively the nerves enter into the structure of every part of the human frame, we might naturally expect that their diseases would prove of great importance. It might be supposed that this would be more especially the case with the stomach, an organ whose functions are so important to the well-being of the whole body. Not only is it endowed like other structures with the powers of motion and sensation, it is also the seat of a special sense intended to regulate the amount of nutriment introduced into the system. Unlike the voluntary muscles its movements are governed by reflex action, whilst its secretion is under the control of the same force. We might, therefore, expect that with so many varied functions depending on the integrity of the nervous system alterations of the digestion arising from this cause would be exceedingly common.

I need scarcely remark that the nervous system

includes the nerve-cells which are collected together in the brain, spinal cord and ganglia, and the nerves which act as conductors between the various organs and these central masses. The nerves appear to be but little susceptible of primary disease, and when we discover alterations in the motion, sensation, or secretory powers of any structure, we suppose that either the nervous centres are in fault or that some organic change is present in the affected part. In the glandular organs the latter is by far the most common, and it is on this account that great caution is necessary before we diagnose any case as being only neurotic. Every practitioner must have treated cases of disorder of the digestion which he was inclined to attribute to a mere nervous derangement, which have been eventually proved, perhaps by their fatal result, to have depended upon disease of an inflammatory or malignant character. I have been careful, therefore, to confine the following examples of the neuroses of the digestive organs to such as I have been able personally to watch for a length of time, and which seemed to me, after their termination, capable of no other explanation.

Authors, with a few exceptions, have contented themselves with describing some particular forms of nervous disorder of the digestive organs, without seeking to discover all the possible deviations from their normal action to which the nerves of this part of the body are liable.

Some have considered the gastric neuroses as though they were all comprised under changes in sensibility,

whilst others have contented themselves with a description of cramp or spasm, as though these represented the sole nervous affections of the stomach and intestines. Looking at the subject from a physiological point of view, it will be evident that the special sense, the motility, the sensibility, the power of secretion, and the vaso-motor system, must all be liable to deviations from their normal state, and I shall therefore consider each of these separately. But we can scarcely suppose that in an organ whose functions are so important and so complicated any one alteration from the healthy condition will generally present itself alone, and on this account it will be necessary to point out how one functional change may be combined with others. Thus, we shall find that a great diminution of the special sense is commonly associated with an alteration in the ordinary sensation of the stomach, or with a diminution in its power of secretion; whilst an increase of its sensibility and irritability is often accompanied by an augmented activity of the glandular apparatus.

CHAPTER II

NEUROSES OF THE SPECIAL SENSIBILITY OF THE STOMACH

The appetite, which is the special sense of the stomach and by which the supply of food required for the system is regulated, is frequently disordered. It may be increased, perverted, or diminished. Usually these changes result from some abnormal condition of the whole body, or of some important organ, but occasionally they arise from a nervous affection of the digestion alone.

A great increase in the desire for food not unfrequently accompanies chronic gastric catarrh. It occurs two or three hours after a meal, is attended with a sensation of giddiness, faintness, or palpitation, and is relieved for a time by food or stimulants. It is, in all probability, produced by the irritation of partially digested food, a fresh supply of nutriment calling forth a new secretion of the gastric juice and thus affording temporary relief.

In the treatment of such cases frequent meals and alcoholic stimulants must be given up, and food of the plainest and most digestible character should be selected. The craving is best relieved by the exhibition of an alkali, combined with ammonia or chloroform,

or lozenges made of the extract of beef may be taken whenever the sensation of hunger is felt. The general treatment should be the same as that for chronic gastric catarrh. The bowels should be freely acted upon by salines and mercurials, whilst soda or potash along with rhubarb, or some other gentle aperient, may be given two or three times a day.

There is another form of increased appetite which does not arise from an inflammatory state of the stomach, but occurs chiefly in young females who are of a nervous or hysterical temperament. The craving takes place usually at night, even after a late dinner, and the distress arising from it is often so severe that large quantities of food are consumed before the appetite can be appeased. In all probability, it arises from an excessive irritability of the stomach that causes the food to be hurried into and along the intestinal canal before digestion and absorption can be completed. In many instances it is associated with diarrhœa, and the stools consist largely of undigested materials.

As regards the treatment of this condition, it is necessary that the chief meal should be in the middle of the day, and that a light supper, accompanied by wine or some other stimulant, should be taken an hour or two before bedtime. Exercise in the open air, and, where it is possible, a change of scene are invaluable. The medicinal treatment must consist of tonics, such as iron, zinc, quinine, &c. Where the sensation of hunger is very severe a moderate dose of morphia, along with a mineral acid, at bedtime, will generally be sufficient to relieve it for the time.

Most writers on medicine speak of cases of perverted appetite, and state that the persons who suffer from it devour not only substances of an indigestible nature, but even such as are unfit for food. It is common enough to find patients, especially those of a hysterical temperament, preferring food that is indigestible, such as the parings of cheese, the rind of roast potatoes, &c., or swallowing, with evident relish, very large doses of soda or chalk. But it is probable that it is the feeling of relief that follows the use of the latter substances, when great acidity is present, that dictates their use, and that the craving for materials difficult of digestion is an instinctive desire for food of such a kind as will not be too quickly dissolved and passed through the pylorus. I have never met with persons of a sound mind who have habitually swallowed substances unfit for food, or of a disgusting nature, and I cannot help suspecting that the descriptions of such cases have been drawn from the subjects of idiot or lunatic asylums.

Anorexia nervosa

It is unnecessary to say that a loss of appetite is one of the commonest symptoms the practitioner has to treat, and that in most cases it is the result of some general disorder or of a morbid state of the digestive canal. But we occasionally meet with cases in which it is at first the only symptom, and appears to arise from some abnormal condition of the nervous system. It is of great importance, on account of

the difficulty of diagnosis that is often experienced and the necessity there exists for firm and judicious treatment. Where the patient is not submitted to medical treatment the unwillingness to take food persists until she is reduced to the most extreme degree of emaciation; in some recovery takes place spontaneously, whilst in others death ensues from exhaustion.

Cases of this description have been recognised for centuries, and have afforded material for wonder or superstition. They have been frequently described as "fasting girls" and have been sometimes regarded as persons especially gifted with the power of dispensing with the necessity for food, whilst in other cases they have been looked upon as impostors trading upon the credulity of the public. A careful perusal of many of their histories will, I believe, convince any unprejudiced person that, in the first instance at least, these individuals have been the victims of disease, and that it was only when the wonder excited by their abstinence stimulated their avarice, or aroused their vanity, that they added deception to support their popularity.

Whytt evidently had this disease in view when he speaks of "a nervous atrophy." He says: "A *marasmus* or sensible wasting of the body, not attended with sweatings, any considerable increase of the excretions by urine or stool, a quick pulse or feverish heat, may deserve the name of nervous." Again, he remarks that "sometimes the disease, after it has brought the patient very low, takes a sudden turn without any

apparent cause. The patient, who had little inclination to eat, has an uncommon craving, and quick digestion even of solid food, which used to lie remarkably heavy on his stomach. His pulse becomes quicker than natural and his skin warm; his veins, which were contracted, appear swelled with blood; from being low-spirited, he becomes more cheerful, and daily grows stronger and plumper. All which effects seem to proceed, in a great measure, if not solely, from some change in the nerves of the stomach and bowels." *

Of late years Sir. W. Gull† seems first to have drawn attention to this disorder, and has been followed by Dr. Lasegue,‡ Dr. Wilks,‖ and some others. I have selected the following from the cases that have fallen beneath my own notice, and they will, I trust, be deemed sufficient to afford some conclusions respecting this interesting and important malady.

Case 14.—Master C—, aged seventeen, had been gradually but steadily losing flesh for eighteen months. When I saw him he was greatly emaciated, seemed unable to undertake the slightest mental or bodily exertion, had a stupid, almost idiotic, look, and although he answered all questions put to him, it was impossible to engage him in conversation. He could scarcely be prevailed upon to touch any food, and that only in the smallest quantities. He, nevertheless, said his appetite was good, at times craving,

* The works of Robert Whytt, M.D., p. 598.
† 'Clinical Society's Transactions,' vol. vii, p. 22.
‡ 'Archives Générales de Médecine,' April, 1873.
‖ 'Diseases of the Nervous System,' p. 384.

but that he became full directly he had eaten a mouthful. He also affirmed that he had a pain "*like a tooth-ache*" in the abdomen. There was some thirst, but he drank but little, as he said liquids always made him feel uncomfortable. The tongue was rather dry, and he never suffered from vomiting. The urine was small in quantity, and contained neither albumen nor sugar. The pulse was very small and feeble. The red blood-globules were crenated, but there was no increase in the number of the white cells.

He was ordered to take pepsin along with his food, and a small dose of cod-liver oil each night at bedtime. It was recommended also that he should be fed every two or three hours with milk thickened with vermicelli or semolina, or with beef tea, soup, rusks, or some other kind of nutritious food.

I saw him five months afterwards, and found a slight improvement. He was still greatly emaciated, his cheeks hollow, and the muscles of his limbs wasted, but he had been able to walk about and appeared to be less reserved and sullen. The bowels were still confined, the stools were small in quantity and hard. He was recommended to persevere with the same diet, but to have fish and minced meat as soon as he could digest it. A mild aperient was also prescribed to be taken when required.

He called upon me again the following May, and there was then a great improvement. He had gained eight pounds in weight, and looked fatter and more healthy. He was much more communicative than at first, and complained of a pain of the left side over the heart.

The stools he stated to be light coloured and knotty. I had at each visit carefully examined his chest and abdomen, without finding any evidence of disease. The respiratory murmur was normal, with the exception of a slightly increased expiration in the right supra-spinous fossa, and the sounds of the heart were natural. The abdomen was contracted; the skin very harsh and dry.

I have received a note from this patient lately detailing his satisfactory progress towards recovery. He had gained flesh and spirits, and was able to undergo a considerable amount of exertion, his appetite had improved, and he took a fair amount of food daily, and with but little inconvenience. He stated in his letter that he thought I should be made accquainted with what he believed was the cause of his illness. He had contracted at school the habit of masturbation, in which he had indulged to a very great extent, and this he supposed had so enfeebled his nervous system that he had been unable to eat or digest his food.

Case 15.—Miss B—, aged twenty-four had been for two years out of health before I saw her. Although formerly the "life of the house," and fond of gaiety and amusement of all kinds, she had gradually become extremely gloomy and reserved. She escaped from the society of her sisters whenever she was able to do so, gave up all employment, and spent her time in a state of moody abstraction, but when roused she was capable of taking long walks without apparent fatigue. Her mother stated that "*she literally eat*

nothing," and she was puzzled to know how existence was maintained. I was warned that, in all probability, she would refuse to answer any questions, as she had a great dislike to be supposed to be ill. There was no history of insanity in the family. She was much emaciated, had a gloomy expression of face, harsh dry skin, and cold extremities, she did not suffer pain, but "could not eat," she had no thirst; the urine was normal, but the bowels were constipated. There was no cough, dyspnœa, nor expectoration, and the pulse was small and feeble. The catamenia had ceased since the commencement of her illness. I carefully examined the chest and abdomen, but could find no evidence of disease. Her friends had consulted several physicians, some of whom advised travelling, others the use of mineral waters, but her health seemed to have become gradually worse in spite of all the treatment that had been adopted.

I insisted on frequent meals of beef tea, soup, milk, eggs, or farinaceous food, with a small quantity of brandy, warm clothing, and the use of a hot bottle to the feet at nights. Nux vomica and iron, with an occasional mild aperient, were also prescribed.

As her family lived at a distance from town I did not see Miss B— until the following summer. She was then certainly improved, her spirits seemed less depressed, and she answered questions more freely. I again carefully examined the chest and abdomen, but could detect no disease. The same plan of treatment was ordered to be continued.

The next year there was a marked change for the

better. She was stouter, and took food with less reluctance; her spirits were more lively, and she now readily entered into conversation. She stated that she never had suffered pain, and her reason for not taking food was the loathing that was produced when she saw it, or even thought of it. I have since heard she has quite recovered, has resumed her occupations, and regained her former flesh and strength, although the catamenia have been entirely absent for five years.

Case 16.—I was requested to visit a young lady, about fifteen years of age, who had been the same day stated by a physician to be dying of consumption. I found her suffering from cough and scanty tenacious expectoration, the pulse was quick, the respiration rapid, and, on physical examination, pneumonia was detected at the base of the right lung. She was excessively emaciated and had been losing flesh for nine months. Her appetite had been very bad, and her friends had been recommended to take her to Scotland, in the hope that change of air would restore her health. She was able to travel, but a few days before I saw her had been suddenly attacked with severe cough, and her friends became so much alarmed at her condition that they returned to London.

The pneumonia ran the usual course ending in recovery, and she left town for her residence in the country, where I was desired to visit her five months afterwards. I found her greatly emaciated, and so weak she was scarcely able to sit up. She had no

cough or expectoration, and I could not detect evidence of disease either in the lungs or heart. The pulse was very small and weak, but not rapid. The abdomen was contracted, her appetite was so bad that she would take no food unless it was forced upon her, the bowels were much constipated, the stools very hard and dry, the urine free from albumen and sugar. I prescribed frequent small meals of soup, milk, and farinaceous food, but as her friends thought it would be impossible to induce her to take them I also advised the use of nutrient enemata. Some tonic medicine was recommended, but her attendants were told that her chance of recovery entirely depended on her being obliged to take nourishment. I have never seen her since, but have heard that, under this treatment, she rapidly improved, gaining flesh and strength, and that she was able in the course of a few months to go to the seaside.

Case 17.—A. R—, aged twelve, was admitted into the London Hospital under my care March 17th, 1878. She was greatly emaciated, and was sent to the hospital under the idea that she was affected with tubercular meningitis. She lay in a state of apparent stupor, taking no notice of those around her, and not replying to questions. She was stated to have frequent attacks of "convulsions," but there was no appearance of paralysis, and when at attempt was made to turn her in bed she resisted it. When examined with the ophthalmoscope, the optic discs proved to be normal but unusually pale. The breathing was quiet, the pulse

quick (100) but regular. She had no cough and no expectoration. The tongue was clean, the abdomen was shrunk, and the bowels much confined; she took no food voluntarily, and seemed very unwilling to swallow when it was forced upon her.

She had been two months ill, and the first symptom that attracted notice was her great unwillingness to eat. This was followed by what were termed by her friends "convulsions," she had gradually lost flesh and become apparently unconscious. She had never suffered from any hysterical symptoms; her father, mother, and sisters were all healthy, but both her grandfather and grandmother had died from insanity.

She was ordered to be fed every two hours with beef tea, soup, or milk, and an aperient was administered.

March 22nd.—Since admission she has considerably improved, takes notice of those around her, and answers questions; her voice is, however, very feeble. She has had the convulsions frequently, but they are evidently not of an epileptic character. They are stated by the nurse to begin with a "trembling all over the body; she then moves her hands, arms, and shoulders in different directions, and tries to raise herself in bed." There was no movement of the muscles of the face, no clenching of the hands, no loss of consciousness and she did not bite her tongue. Each attack lasted about ten minutes.

The forcible feeding was continued, tonics were prescribed, and she gradually improved. Her weight on admission was only fifty pounds, but it increased

until it reached fifty-seven pounds. The "fits" entirely ceased, and she was able to walk about the ward. She was discharged cured on August 17th, and has remained quite well ever since.

I have selected the preceding cases from a number that have come beneath my observation in private and public practice, and from them there can be little difficulty in laying down the course and symptoms of the malady.

Anorexia nervosa seems to be confined to young persons, the oldest that I have met with being only twenty-five years of age; in most instances it first makes its appearance between fifteen and twenty. It occurs chiefly in the female sex, but, as will be observed in one of the foregoing cases, boys may be also the subjects of it. It is much more common in the wealthier classes of society than amongst those who have to procure their bread by daily labour.

The earliest indication of a failure in health is a distaste for food. At first animal food is alone disliked, and the patient will partake pretty freely of fish, vegetables, or fruit. The latter is more generally chosen, and some will eat oranges or apples when all other kinds of nourishment are refused. There is no vomiting and no complaint of pain, but in many cases a sensation of fulness is experienced. The bowels are almost always constipated, and the evacuations hard, dry, and knotty. The extremities are cold, especially at night, the action of the heart feeble, and the pulse small, slow, and regular.

In almost every instance, even at an early period, the temper is irritable, the patient becomes obstinate and self-willed, the sleep is very imperfect, and dreams and nightmare form constant subjects of complaint. In one case the patient was liable to slight hallucinations. Still more remarkable is the restlessness. I have known a patient in this condition so unable to remain at home that she would undertake railway journeys without any apparent motive, and although she knew they would be followed by attacks of severe exhaustion that would confine her to her bed for many days. Others will take long and purposeless walks, and it is a matter of surprise how persons eating so little can undergo so much fatigue. Emaciation soon shows itself, the patient steadily loses weight, the cheeks become thin, and she presents the appearance as though she were suffering from advanced phthisis. The ankles in almost every case begin to swell at an early period, and this is often the first symptom that alarms the friends and convinces them of the serious nature of the malady. In other instances I have seen violent attacks of palpitation, attended with great dyspnœa and fear of instant death. The pulse under these circumstances is often exceedingly rapid (130 or 140 in the minute), and yet in two or three days it may gradually fall, the exhaustion may pass off, and the patient resume her former state. The catamenia are always irregular, often suppressed, and in one case had not returned for five years, although the other symptoms had disappeared.

It will be readily understood that a person in such

an exhausted condition must be especially liable to attacks of acute inflammation. In Case 16, it will be observed, I was consulted on account of pneumonia; in two others the patients suffered from pleurisy, followed by liquid effusion. In these cases, on account of the great emaciation and the previous history of ill health, I diagnosed the presence of tubercle, and in all of them the opinion proved incorrect, as the patients perfectly recovered. A temporary improvement as regards the anorexia followed the illness, inasmuch as the patients had been forcibly fed during it, yet in each case as soon as the medical attendance ceased the dislike to food and the other symptoms again manifested themselves.

In severe cases, where the complaint is allowed to proceed unchecked by treatment, the situation of the patient becomes most pitiable. The dislike to food increases, until it is necessary to force it upon her, and as there is little or no thirst, even liquids are refused. The restlessness, which is so marked a feature in the earlier stage, now disappears, and the patient becomes less and less capable of exertion, until at last she is entirely confined to the recumbent position. The wasted limbs require to be kept apart, lest ulcerations should be produced by their contact, and the back and nates demand constant attention to prevent the formation of bed sores. The patient often lies in a condition of semi-consciousness, from which she can be roused, but into which she relapses as soon as she is left to herself. The pulse is small and

feeble, and often very rapid. The skin is dry and harsh, the bowels obstinately confined, the urine scanty, and of low specific gravity.

Even from this condition the patient may be gradually restored to health by proper treatment, but, as may be readily imagined, many are allowed to sink under the idea that they are suffering from tubercular disease of the lungs or brain.

The following cases are sufficient to show there is danger of a fatal issue where appropriate treatment has not been undertaken, or has been deferred too long.

Case 18.—Many years ago I was requested to see a lady who was exceedingly emaciated and had been slowly failing in health for a length of time. She would not eat, and, although I could find no physical signs of phthisis, I concurred in the opinion of those around her, that she was sinking from disease of the lungs. Death took place from exhaustion, and to my extreme surprise I was unable to discover, on post-mortem examination, the slightest trace of disease in any organ of the body.

Case 19.—A young man, about nineteen years of age, was admitted into the London Hospital, supposed to be suffering from intestinal obstruction. His parents stated that he had complained of pain of the abdomen, for several days, and that the bowels had not acted, notwithstanding the use of aperient medicine. The patient was excessively emaciated, would scarcely

answer questions, and seemed almost idiotic. He was not suffering any pain, but refused all food, as he said he was so "excessively full" he was unable to take it. The abdomen was much retracted, the pulse was very small and feeble, and the boy seemed sinking from exhaustion.

He was said to have enjoyed good health until a few months previously, when he began to refuse to take food, and rapidly lost flesh. He was, however, able to walk, and had not been placed under medical care. One of his relatives had been insane, but the patient himself had shown no signs of mental derangement. Frequent small doses of liquid nourishment were prescribed, together with the use of the stomach-pump, if it was found impossible to feed him otherwise, but his exhaustion was so great that he sank in a few days after his admission. On post-mortem examination all the organs were found healthy, excepting the cæcum, where a small ulceration existed. It seemed to be about to perforate the peritoneum, but there were no appearances of peritonitis.

Sir W. Gull, in the paper before referred to, remarks: "Although the two cases I have given have ended in recovery, my experience supplies one instance, at least, of a fatal termination to this malady. When the emaciation is at the extremest œdema may supervene in the lower extremities, the patient may become sleepless, the pulse become quick, and death be approached by symptoms of feeble febrile reaction. In one such case the post-mortem revealed no more

than thrombosis of the femoral veins, which appeared to be coincident with the œdema of the lower limbs. Death apparently followed from starvation alone."

Dr. Wilks gives two cases of death from this malady, in one of which a post-mortem examination was obtained. "On a most careful search through the body not a particle of disease of any kind was found. The intestine was healthy throughout, and, indeed, from the necropsy alone it would have been difficult to have discovered the cause of death."

CHAPTER III

PATHOLOGY OF ANOREXIA NERVOSA

The symptoms of the disease are easy of explanation. It has been proved by experiments on animals that a long-continued deficiency in the supply of food eventually produces the same results as complete starvation. As the amount of food that is taken in this complaint is insufficient for the requirements of the system, and as, from the early age at which it occurs, there is less power of resistance than at a later period of life, the signs of starvation soon manifest themselves, and are the only symptoms of the malady.

The emaciation forms a remarkable contrast to the large amount of fat always present in the subjects of atrophy of the stomach. In the disorder we are now considering the blood is starved of all its constituents, whilst in degeneration of the gastric glands only the albuminous materials are defective, and the fat consequently accumulates in the tissues. There is another striking difference in the appearance of the patients. When the albumen is alone deficient the skin and mucous membranes are bloodless, as the substance of which the red globules are composed is wanting, but in this form of anorexia the blood,

although deficient in quantity, is not altered in its composition, and the complexion is therefore not equally anæmic.

In anorexia nervosa the extremities are cold, as the supply of matters easily oxidisable is so greatly diminished that the heat has to be supported chiefly at the expense of the tissues of the body. There is no symptom that seems so inexplicable to the friends of the patients as the constant activity they exhibit; but if the experiments of physiologists are consulted it will be seen that restlessness is one of the most marked signs of the early stage of starvation. The loss of power of attention and memory so generally remarked, evidently results from cerebral anæmia.

The cause of the complaint is much more difficult of explanation. All of my cases have occurred in persons previously in good health, and with the exception of Case 14, where the patient attributed his illness to self-abuse, I have never been able to detect a reason for the disease, either in the habits or the circumstances of the patients.

It has been surmised by some authors that the fear of pain of the stomach produced by indigestion is the original cause for the refusal of food. I have, however, carefully questioned the subjects of the disorder on the point, and, with one exception, they have all denied having experienced pain after eating. In addition to this, let it be remembered that, notwithstanding the severe suffering with which gastric ulcer is accompanied, patients will often endure it in order

to satisfy their urgent desire for food. In two cases the sensation was described as one of almost intolerable fulness, and one patient resisted violently the forcible feeding, because he felt already "distended as if he would burst." That this was only a morbid sensation was proved by the fact that the abdomen was retracted, and after death the stomach and small intestines were found to be empty.

In a healthy individual hunger is associated with an empty state of the stomach, whilst the feeling of distension is only experienced when the organ is over-filled. But in the above case it is clear that the ordinary sensibility of the mucous membrane was perverted, since the sensation of fulness was present even when the stomach was entirely empty. Physiologists are not agreed as to the nerves by which the sensation of hunger is conveyed from the stomach to the nervous centres, but all admit that it is an indication in a healthy state of a want experienced by the system for a fresh supply of nutriment. It is evident that in the cases above detailed the normal sensibility of the organ must have been altered, as from the rapid loss of flesh there was an urgent necessity for the introduction of a large amount of food into the system. The only conclusion, then, to which it seems to me we can arrive is, that in these cases we have either anæsthesia or a perversion of the sensibility of the nerves distributed to the stomach, analogous to what we sometimes observe with respect to the cutaneous nerves in hysterical females.

The name applied to the disease has, of course,

varied, according to the opinions of authors respecting its pathology; thus Sir W. Gull in his first mention of it, designated it "apepsia hysterica," whilst Dr. Laségue named it "anorexia hysterica." The term *hysterical* will, no doubt, commend itself to those who are inclined to look upon every affection of the nervous system that occurs in young females as connected with a morbid state of the generative organs, but it appears to me that we lose greatly in precision by the use of a term that includes so many different affections. No one has yet been able to designate the exact condition of the nervous system to which he would restrict the term hysteria, nor has it yet been proved that the generative organs are necessarily in fault. It is true that in almost every case amongst the females the catamenia were irregular or suppressed, but this important function could scarcely be expected to continue in a normal state when the whole system was so impoverished. It will, I think, be advisable to retain the name proposed by Sir W. Gull in his second notice of the disease (anorexia nervosa) as simply expressing the main and most important symptom, without committing ourselves to any theory as to the cause of the morbid state of the stomach.

CHAPTER IV

DIAGNOSIS AND TREATMENT OF ANOREXIA NERVOSA

Diagnosis.—It might be supposed that the diagnosis of this complaint would present no difficulty. Such is, however, not the case, for want of appetite and a gradual loss of flesh are so frequently met with in other chronic disorders, that the greatest care will alone enable us to avoid mistakes. I have myself diagnosed some of these cases as undoubtedly tubercular, and I have known a similar error committed by others. Indeed, in any instance it is unsafe to determine that anorexia is of nervous origin from a single observation, the case should be carefully watched, and the diagnosis is only justifiable when all other conditions likely to produce similar symptoms can be excluded with certainty.

I have twice known nervous anorexia diagnosed as tubercular meningitis, and in one of these instances the mistake was committed by a well-known hospital physician, who had devoted especial attention to diseases of the nervous system. The somnolent condition of the patient in the later stages of the complaint, the obstinate constipation, and the persistent loss of flesh,

attended sometimes, as in Case 17, by a history of convulsions, sufficiently explain how the error may occur. The disease, however, differs from tubercular meningitis in the patient being more readily roused from her stupor, in the absence of paralysis either of the limbs or cerebral nerves, of severe headache, delirium, giddiness, retraction of the head or vomiting, and in the progress of the complaint being much slower. In addition to these the temperature is usually below the normal point, the pulse is not quickened by exertion, and, above all, when food is regularly forced upon the patient, symptoms of improvement begin to manifest themselves.

Anorexia nervosa is liable to be confounded with tubercular peritonitis, as occasionally we see want of appetite and loss of flesh almost the only symptoms of this disease in its early stage, and in some cases it seems impossible at first to distinguish between them. After a time, however, the pain, tenderness, and distension of the abdomen, the attacks of vomiting, the increased temperature and rapidity of the pulse, together with symptoms of a co-existing affection of the lungs, remove all chance of error.

When a patient is attacked with acute inflammation of the lung or pleura during the course of the complaint, it is impossible to determine whether the previous loss of flesh has been the result of a tubercular constitution, or of anorexia alone. The previous absence of cough, expectoration, night-sweats, diarrhœa, and of an increased rapidity of the pulse might induce us to attribute it to the latter cause, but a

careful observation of the progress of the case can alone enable us definitely to settle the diagnosis.

Treatment.—As the disease consists only in the loss of appetite, whilst the power of digestion remains intact, it is evident that careful and regular feeding of the patient must be the first principle in the treatment. In the early stage it is advisable to try to overcome by argument her dislike to food, as the physician can rarely at this period rely upon the active co-operation of her friends. So long as she can walk about, she can point out that her activity is increased rather than diminished by abstinence, and the ignorance of relatives generally leads them to blame any determined attempt at forcible feeding. Every means therefore should be employed to tempt the appetite, and observation will usually show that certain articles of diet are less distasteful than others. In many cases fowls, game, or even shellfish will be taken when beef and mutton are obstinately rejected, in others vegetables and fruit are selected. Milk in various forms should be tried, either cold or thickened with vermicelli or maccaroni; jellies and farinaceous puddings are sometimes acceptable, and although inferior to other articles of diet for the purpose of nutrition, they supply matter for oxidation, and thus save the rapid waste of the tissues. Not unfrequently the patient may be induced to choose her own diet, and it is then better to acquiesce in her choice, than incur the risk of increasing her obstinacy by insisting on more wholesome food.

Dr. Laségue remarks: "I attended with Trousseau a

young woman, who having been thoroughly hysterical from the time of puberty, became, without appreciable cause, the subject of an invincible anorexia. She had reached such a state of emaciation and debility that she could no longer leave her bed. Her food consisted exclusively of some cups of tea with milk. Obstinate constipation had led to serous diarrhœa, with pseudo-membranous exudations. Nevertheless she became pregnant, and under the influence of that condition she set her wits to work to find out some article of food agreeable to her stomach. During six months she lived only on café au lait, into which she cut slices of pickled cucumbers. At the present time she is in a most satisfactory state of health, although always remaining excessively lean."*

But although we may permit a certain amount of choice as regards diet to the patient, we must restrict her in the use of stimulants. Many are inclined to trust to these to obviate the exhaustion arising from want of food, and great caution should be used lest an injurious habit be thus induced. Generally some malt liquor, such as bitter ale or stout may be prescribed along with the meals, or if these are refused, port wine or Burgundy may be substituted. But the quantity should be carefully regulated, and on no account must the patient be allowed to substitute alcohol for food.

In the later stages, when she has become so feeble that she is unable to go about, forcible feeding should

* "On Hysterical Anorexia," by Dr Laségue. Translated in the 'Medical Times and Gazette,' Sept. 27, 1873.

be adopted. The patient ought to be treated as a person of unsound mind, and small quantities of milk, soup, beef tea, eggs, or any other kind of nutritious food must be frequently administered. Friends are never to be relied upon, but the case should be entrusted to a properly trained nurse, who must be held responsible for the proper carrying out of the treatment. In only one instance have I found it requisite to order the use of the stomach-pump, and if sufficient firmness is displayed by the attendants, such a measure will be scarcely ever necessary.

I have seen great benefit from nutritive enemata where the feeling of distension after eating was excessive. They are useful as a means of introducing food into the system, and also in reconciling the patient to the forcible feeding, as she is often induced to swallow nourishment in the hope of escaping their administration.

Although a moderate amount of exercise should be allowed in the early stage, care must be taken to check the restlessness that is so marked a feature of the complaint. In every instance that has fallen under my notice, in which acute inflammatory disease has complicated the malady, the attack has followed exhaustion produced by excessive exertion. In the later stages absolute rest is essential in order to save the strength of the patient. Bed sores are apt to occur in bad cases, and they should be watched and carefully treated on their first appearance.

Coldness of the extremities is always a prominent symptom. So long as the patient is able to walk about

the clothing must be warm, and she should not be permitted to expose herself to wet or extreme cold. When confined to bed, unless during the heat of summer, a fire should be kept in the room, and hot bottles applied to the extremities. This is not merely to relieve the feeling of cold, it assists the stomach in the performance of its functions, for a low temperature has a very marked effect in depressing the action of the digestive organs.

The bowels are, as a rule, obstinately confined. No doubt this is partly owing to atony of the muscular coat of the colon, but it must be also remembered that under ordinary circumstances the fecal evacuations consist of such of the materials of the food as have escaped digestion, and as the secretion of gastric juice is in these cases tolerably active, whilst the amount of nourishment taken is small, the constipation in a great measure depends on the diminished amount of fæces actually produced. Severe purgatives are therefore inadmissible, and the action of the intestines should, when necessary, be promoted by an enema of warm water, or, if this fails, an aloetic or rhubarb pill may be employed.

Tonics of some kind are always useful, but the patient often cannot be prevailed upon to take them. In the early stage, if anæmia is present, we may use some preparation of iron, such as the effervescing citrate, the phosphate, or the saccharated carbonate, or it may be combined with quinine and strychnia, as in the "Easton's Syrup," or with calumba or quassia, according to the circumstances of the case. Where there is

no anæmia, or when iron disagrees, zinc may be prescribed, especially the valerianate or the sulphate. In cases in which the feeling of distension is very marked I have seen more benefit from the use of pepsin and hydrochloric acid after meals than from the mineral tonics.

One of the most distressing symptoms of the complaint is an inability to sleep. This, of course, like the restlessness during the day, arises from cerebral anæmia, and food is the only effectual remedy. If the patient can be persuaded to take some beef tea or soup, or a sandwich and a glass of wine or bitter ale, an hour before bedtime, sleep will usually follow. The bromide of potash along with ammonia is the best soporific when drugs are requisite. Chloral is more useful than opium, but it is apt to depress the strength and disturb the digestion the following day. In many cases absolute quiet, a thoroughly darkened room, and a low position of the head, will produce rest when soporifics have completely failed.

CHAPTER V

NEUROSES OF ORDINARY SENSIBILITY

Morbid Sensibility of the Stomach

Modifications of the sensibility of the digestive canal, unattended by pain, are by no means uncommon, and usually occur in persons suffering from nervous exhaustion. Under the name of "morbid sensibility," this disorder at one time attracted considerable attention, and almost every form of dyspepsia was referred to it.*

In a case of this kind the patient can often trace the passage of the food along the mucous membrane, especially when it has been taken warm or is of a stimulating character. In some there is a sensation as if the digestive tube were in a state of constant motion, and this often gives rise to a suspicion that the patient is suffering from worms. When, as is not unfrequently the case, the action of the stomach is so impaired that portions of the food are passed in an undigested state, these insoluble materials are often looked upon as indubitable evidence of the existence of parasites. Others describe a sensation that shows

* 'On Morbid Sensibility of the Stomach and Bowels.' By Dr James Johnson.

still more the excited condition of the nervous system. It is as if "a wave" passed over and obscured the mental faculties for a second, this feeling being instantaneously followed by a movement of flatus in the stomach or intestines.

The tongue is usually clean, the appetite good, sometimes craving, the urine clear, depositing phosphates or the oxalate of lime. The bowels are almost always confined, and in females especially, but sometimes also in the other sex the abdominal aorta may be felt to pulsate with unusual force.

These evidences of disorder in the digestive canal are always associated with others, indicating a feeble condition of the nervous system. Attacks of giddiness and mental depression are seldom absent; there is usually loss of strength, sometimes general emaciation, and the severity of these symptoms seems to be increased by any exacerbation of the disorder of the digestive organs.

The treatment of this form of dyspepsia is most troublesome and unsatisfactory, not so much on account of the difficulty of combating the disease as from the fact that the sufferer has seldom sufficient patience to persevere with the remedies prescribed for him.

Purgatives should be used with caution as they tend to increase the irritation. Even a dose of castor oil will, in some instances, produce great prostration of strength, and when aperients are necessary they must be of the mildest kind. An electuary of senna or sulphur is ordinarily most useful, but in some cases

it is better to trust entirely to enemata of warm water.

Tonics form the chief part of the treatment, and their selection must depend upon the particular features of the case.

When the most prominent symptoms seem to arise from the state of the digestive organs, we may have recourse to bismuth, silver, or iron. Bismuth is useful when there are frequent slight attacks of gastric catarrh, and when acidity is also present. The preparations of silver are valuable in the very chronic cases, especially if the abnormal sensations are not associated with signs of catarrh of the mucous membrane. The oxide is preferable to the nitrate of silver, and may be usefully combined with small doses of morphia or hyoscyamus. Iron is invaluable whenever anæmia is present, and is to be preferred in young persons.

When the nervous system is more prominently affected than the digestion, zinc or nux vomica is more useful than the tonics before mentioned.

The diet requires careful regulation, and should be varied according to the condition of the digestive organs. Practically, the best information respecting the suitability of the food may be obtained by watching the sensations of the patient. Whatever meal has been followed by an augmented sensibility of the digestive canal, or by an increase in the mental distress, must have been unsuitable either in quantity or quality, and observation will soon show in what way the diet may be best improved.

As a general rule, the food should be sparing in

amount, and vegetables, soups, wines, and other articles difficult of digestion or apt to produce acidity must be avoided. Bread, lean meat, and farinaceous food should form the chief articles of diet, and all stimulants should be prohibited unless there is some special indication for their employment.

Hyperœsthesia of the Stomach

The commonest form of this disorder shows itself as the result of ulceration of the stomach occurring in young persons. It is often exceedingly rebellious to treatment, and is probably analogous to the neuralgic affections of the ankle and knee that so frequently follow injuries of these parts in hysterical females.

The usual history of such a case is that a patient has been suffering from the ordinary symptoms of gastric ulcer, and has been kept for some time with marked benefit upon a liquid diet, when without apparent reason, although the vomiting may have ceased, the pain returns as severe as before or even increases in violence. Its character also not unfrequently changes. Sometimes it is as severe after liquids as after solids; in other instances it ceases for many days and reappears without any evident cause, or it comes on directly after the food has been taken, but does not last during the whole of the digestive process, or it may attack the patient more severely at night when the stomach is empty than during the period of its greatest activity.

The localised tenderness characteristic of gastric ulcer is usually replaced by a general sensitiveness of the epigastric region, or the whole of the abdomen appears unduly sensitive, deep pressure provoking less complaint than a slight touch. The pain is usually less affected by exercise or standing than during the period of ulceration, but it is not unfrequently increased at, or just before, the catamenial periods. Under these circumstances it will be often observed that the patient is gaining flesh, the appetite is good, sometimes craving, and flatulence is a prominent symptom, even when pain is not present.

In some cases there is a well-marked interval between the cessation of the symptoms of ulceration and the appearance of those of the hyperæsthesia. One striking and very obstinate case left the London Hospital quite free from all pain and vomiting, but returned in a few months (during which she had grown remarkably stout) with a sharp intermitting pain in the epigastrium, coming on directly after food. In others the pain very gradually alters in its character, and it is impossible to say when the hyperæsthesia has replaced the suffering resulting from the ulceration. In fact, in many cases it is only by watching the effects produced by a tonic treatment that we are able to convince ourselves of the neuralgic nature of the complaint.

Treatment.—The first and most important point is to counteract any other morbid condition of the digestive organs that may coexist with the hyperæsthesia. When we have reason to believe that chronic gastric

catarrh is present, mercurial and saline remedies afford the best preparation for future treatment. If, on the contrary, an atonic state of the colon is a prominent symptom, we should attempt, by the exhibition of an aloetic pill or some other mild aperient, to overcome the tendency to constipation.

The food must be of a digestible character and should be chosen so as to suit the condition of the digestive canal. In some cases milk, either alone, or thickened with vermicelli, semolina, or macaroni is most suitable; in others, various kinds of soup or broth seem to answer best. At other times, and this is especially the case when there is much flatulence, minced mutton or chicken, or some digestible fish such as whiting or sole, can be taken without pain when liquids produce suffering. Pastry, vegetables and fruit are, as a rule, injurious.

Some form of alcoholic stimulant is generally useful. Small quantities of well diluted brandy or whiskey are usually best fitted for these cases, but in others claret or even port succeeds where spirit increases the pain.

Tonics must form our chief reliance, but each case requires careful consideration before it is determined which drug should be prescribed. Iron is invaluable where it agrees, and the milder preparations such as the reduced iron, the lactate, or the saccharated carbonate, should be first tried. If flatulence is a prominent symptom, pepsin combined with a small dose of capsicum and ipecacuanha often affords great relief. When the urine is pale and deposits phosphates,

ten or fifteen minims of the dilute hydrochloric acid will be found most suitable. As the pain becomes less severe and the intervals longer, a course of "Easton's syrup," of quinine and strychnia, or of valerianate of zinc may be employed to restore tone to the mucous membrane.

Abdominal Neuralgia

Neuralgia rarely occurs in the gastro-intestinal tract, excepting as the result of some organic change in it, or the neighbouring organs. Since the abdominal nerves are not exposed, as those of the limbs, to sudden changes of temperature, nor are surrounded in their course by unyielding bony structures, as the nerves of the head and face, they are less liable to this affection than other parts of the body. Again, as malaria, syphilis and gout, which are the chief predisposing causes of neuralgia, ordinarily affect such of the abdominal organs as are but little endowed with sensitive nerves, it is seldom produced by constitutional ailments. We should, therefore, be most cautious in our diagnosis of idiopathic neuralgia as affecting the digestive tract. Every one must have seen how often the subsequent development of an aneurism, a deep abscess, or disease of the bones of the spine, has explained the cause of pains of the abdomen, which had been unhesitatingly referred to a mere nervous affection in the early stage of the malady.

I have selected the following cases as examples of neuralgia affecting the stomach and colon. Perhaps

it would be almost better to term them cases of abdominal neuralgia, for the pain in most of them shifted its seat, and varied in its character from time to time. They were, with the exception of the two first, long under observation, and the diagnosis was not looked upon as certain until after their favourable termination.

Case 20.—Miss S—, aged thirty-five, a native of Canada, used to suffer severely from neuralgic headache, but this has for many months been less frequent. Since this time she has become liable to attacks of intense pain in the epigastrium, which at one time will last for many days, at another will pass off in a few hours. The attacks frequently occur in the early morning, and are not relieved by the recumbent posture; the pain is lessened by severe pressure upon the epigastrium, and some hot brandy-and-water will often dissipate it at once. It is always accompanied by a neuralgic pain of the right side of the face, which subsides along with that of the epigastrium. She has no vomiting, constipation, or other symptom of dyspepsia, and when free from the pain she feels quite well. The catamenia are regular and not excessive. She never had ague or any other febrile disorder.

All the organs of the chest and abdomen were carefully examined, but no disease could be detected. The urine was normal. There was some tenderness of the spine opposite to the point where the pain of the epigastrium was felt.

She was ordered "Easton's syrup," porter, and good diet, and when I last heard of her the pains had become much less frequent and severe. Indeed, she stated she had not suffered from a violent attack since beginning the treatment.

There can, I think, be little doubt as to the neuralgic character of this case. The pain in the epigastrium only came on occasionally, and could be generally referred to fatigue or excitement; it was always accompanied by neuralgia of the right cheek, which subsided at the same time as the gastric pain, and the patient had been formerly subject to headaches, but they had disappeared since she had become liable to her present disorder. There were no symptoms of dyspepsia in the intervals of the attacks, which were generally alleviated by the use of stimulants, and were rapidly diminished both in severity and frequency by tonics.

It will be remarked that the pain in the above case often lasted for days, but this is not the commonest form of neuralgia of the stomach. More generally it comes on with great violence at some particular period, especially when the patient is exhausted or the stomach is empty. Thus, I have known a lady always suffer from severe epigastric pain after eating any kind of fish during the catamenial period, although she could take it without its producing the slightest uneasiness at any other time. In the following case, which was evidently of a neuralgic character, the pain occurred only just before the usual hour of a meal. In some similar instances I have been satisfied that along with

the neuralgia there was also an alteration in the secretion of the stomach, but I had not the opportunity of ascertaining if such was present in this patient. His appearance suggested the idea of gout, which is the most common constitutional cause of abdominal neuralgia.

Case 21.—Mr. B—, aged fifty-five, has been ill for the last two years suffering from severe pain in the epigastrium. It attacks him two or three times a day, usually at the same hour, and always shortly before food. It is relieved by eating or by stimulants, and usually lasts about half an hour. Its severity and frequency prevent him from leaving his home, but he has observed that if he becomes much interested or excited with anything the pain will often not come on. He has no symptoms of dyspepsia, the appetite is good, the bowels regular, the urine contains neither albumen nor sugar.

Thinking the case was probably of gouty origin I prescribed Liquor Potassæ and bromide of potash, but I do not know whether any relief was afforded.

There is a more rare form of abdominal neuralgia in which, although the pain is chiefly referred to the region of the stomach, there is considerable difficulty in determining with certainty the organ really affected. I have selected the following cases as illustrations of this point. It will be observed that the pain is described as continuous, and they are, in this particular, different from those before detailed. But, although the suffering seemed to the patients never to cease, they

were usually, although not always, able to sleep, and on some days it was trifling as compared with others; even at certain times of the day there was ordinarily an exacerbation, but after some hours only a feeling of soreness remained.

Case 22.—Miss C—, aged sixty, consulted me respecting soreness of the throat extending to the stomach, and aggravated by food, which had been only present for a few days. She had for many years been subject to dyspepsia and constipation, and had formerly suffered for a length of time from sciatica. She was of a gouty family, and the ends of the phalanges of the fingers were nodular. Under ordinary treatment this complaint soon passed away and she regained her usual strength and health.

I was requested to visit her some months afterwards. She had suffered the loss of some old friends to whom she had been warmly attached, and her spirits had been in consequence greatly depressed. She now complained of a constant and severe pain of the abdomen. It was chiefly referred to the left hypochondrium, but its situation seemed to shift from day to day. It was described as of a "darting and pricking" character, often attacking her during the night, and entirely preventing sleep. It varied in severity at different times, and often seemed relieved on the days when the bowels had been more freely moved than usual. It was so much aggravated by motion that the patient was entirely confined to the bed or sofa. It was usually increased after solid food, but this was

subject to great variety. Acidity was a prominent symptom, and the burning sensation that accompanied it seemed to intensify the suffering; flatulence and constipation were also prominent features of the case.

On examination of the abdomen no tenderness could be discovered except in the left hypochondrium. Here I could distinctly feel a hard and irregular tumour, which was partially tympanitic on percussion. It was somewhat movable, and as it seemed to yield to the pressure of the finger, I concluded it was a fecal accumulation. Pressure on the tumour seemed, however, to aggravate the suffering. Miss C— had never had any skin eruption; she had no vomiting, had never had hæmatemesis nor had she passed blood by stool. She was placed on a liquid diet, the bowels were kept gently open, and "Brandish's alkaline solution" was prescribed to check the acidity.

No improvement resulted from this treatment, and she rapidly lost flesh and strength to such an extent that I was led to the conclusion that she was suffering from a cancerous tumour of the abdomen. She was removed to the country, where she so far recovered as to be able to enjoy an occasional drive in the open air, and eventually returned to town greatly improved in every respect excepting the pain, but in the course of a short time this also subsided, and she appeared to regain her former health.

A few months afterwards a fresh attack occurred, accompanied with depression of spirits and loss of flesh and strength. But in the course of one or two months the symptoms again gradually disappeared.

I saw her frequently with similar attacks during the next three years. For periods varying from one to three months at a time, Miss C— was confined to the bed or sofa, suffering from intense and nearly constant pain, chiefly referred to the epigastrium or left side, but shooting from these regions to all parts of the abdomen. At the commencement of each attack there were usually great acidity and constipation of the bowels, but the pain was not removed when these were relieved. The recurrences could not be attributed to errors in diet, for she entirely subsisted on milk thickened with vermicelli or semolina for at least two years. The first remedy that seemed to shorten the duration of the attacks was cinchona, which was given in moderate doses. Repeated blistering always afforded temporary relief, but the effects soon disappeared.

After she had suffered in this way for nearly two years she was seized with excruciating neuralgia in the face and head. The teeth were not diseased, the ears and nose were healthy, and no source of irritation could be discovered. The use of tonics and the local application of aconite and other sedatives afforded relief in about five weeks, but since that time she has only once suffered from her abdominal pain. During the last twelve months she has been entirely free from any attack, her appetite is good, she can digest animal food, and has quite regained her former flesh and strength.

From the pain having been preceded by dyspepsia and accompanied by constipation, we might naturally suspect that the above case was only one of hyperæs-

thesia arising from a previous ulceration of the stomach or colon.

The presence of a fecal tumour would seem to lend support to the supposition that an ulcer was present in the latter organ. But, on the other hand, the pain was not removed when the constipation was overcome, it was not of a griping character, was very severe and continuous for days together, occasionally even preventing sleep at night; the stools never contained either blood or mucus, and although the bowels remained in an inactive condition the attacks at times subsided for months together.

Neither did the symptoms seem to indicate ulceration of the stomach. Although the pain was less when the patient was kept to a milk diet, it was not limited to the period of digestion, but sometimes continued both night and day. It varied not only in severity, but in the part to which it was referred; at one time the left hypochondrium was the chief seat of the suffering, at another the epigastrium, at another it was diffused over the whole abdomen. The patient never had vomiting or hæmatemesis, nor had she passed blood by stool; there was no localised tenderness on pressure of the epigastrium, and the loss of flesh and strength was far greater than is usually seen in cases of simple gastric ulcer.

The circumstances that seem to point to the neuralgic character of the case are its long persistence in a member of a gouty family, and in one who had already severely suffered from sciatica and was subsequently attacked with severe facial neuralgia. The great

intensity of the pain, and its variableness from day to day, both as regards its seat and severity, its disappearance and return without apparent cause, and, above all, the relief afforded by a tonic treatment, seem to point to the same conclusion.

Case 23.—Mrs. S—, aged twenty-three, had been complaining for eighteen months of frequent attacks of pain of the abdomen. At first they used to affect her only for a day or two, coming on directly after the catamenial period, and lasting for a few days at a time, but they had latterly increased in frequency and severity. When I saw her she had been suffering for many weeks from almost constant pain, referred chiefly to the umbilical region. The pain varied in intensity, not only from day to day, but from hour to hour; it was relieved by the recumbent position, but was not increased by food. The appetite was good, the bowels rather relaxed, the catamenia were regular and not excessive. Any aperient medicine produced an exacerbation of her suffering.

The whole abdomen was somewhat tender, but there was no spot particularly sensitive to pressure. I could not discover evidence of disease in any of the abdominal organs, but the uterus seemed somewhat tender. She had suffered from facial neuralgia, and her mother had been a martyr to the same complaint.

She was treated with bismuth and morphia so as to check the tendency to diarrhœa, and as soon as the irritability of the bowels was overcome quinine was

prescribed. The pain was relieved by these means, but she did not get entirely rid of it until after a residence for many months at the seaside. She has since this remained well, excepting a severe attack of intercostal neuralgia.

On seeing this patient for the first time my impression was that the pain was the result of some affection of the uterus or ovaries. The limitation of the attacks at first to the few days immediately following the catamenial periods, the increase of pain on exertion, the tenderness of the neck of the uterus, and a certain amount of leucorrhœa, gave support to this idea. But, on the other hand, she had been under the care of some eminent specialists who had ineffectually employed the ordinary treatment for uterine congestion, and in addition to this, the situation of the pain in the abdomen, and its not being referred to the back or hypogastrium, its variableness in respect to severity and location, its increase with any irritation of the bowels, and the history of neuralgia in the patient's family, seem to point to a neuralgic condition of the abdominal nerves or ganglia. The complete disappearance of the attacks after a tonic treatment and residence at the seaside appears to set at rest any doubt as to the correctness of the diagnosis.

But although neuralgia may attack the stomach or any of the other abdominal viscera, we more frequently meet with well-marked cases of it in the large intestine. This probably arises from the greater liability to irritation to which this portion of the digestive tract is

exposed from fecal accumulations; it is especially apt to occur when a person who has suffered from chronic catarrh of this part becomes exposed to any of the predisposing causes of neuralgia, such as nervous exhaustion or malaria. I have selected the two following cases as illustrations of this point, from a number of well-marked examples that have fallen under my observation.

Case 24.—I first saw Mr. A—, aged thirty-nine, in the year 1874. He had for many years been subject to attacks of colic, but he chiefly complained of a dull uneasy sensation in the region of the cæcum. The bowels acted irregularly, but were mostly confined; the urine was normal. He was of a highly nervous temperament and was subject to depression of spirits, but his general health was in other respects good. The cæcum felt rather full, and was somewhat tender on deep pressure. During this and the following year he gradually improved, the uneasiness eventually disappeared, but the bowels remained constipated.

He began to complain in the year 1877 of pain at the top of the head, which had come on gradually. The scalp was tender on pressure, and the pain varied greatly in intensity. He was extremely nervous, and was under a constant apprehension that he was suffering from some organic disease of the brain.

A few months afterwards he was subjected to a severe domestic affliction, after which his nervous symptoms became aggravated. The pain of the head increased, he was unable to direct his attention to

any subject, and even the attempt to read or write produced great exhaustion; he was subject to sudden panics, in which he felt as if he were dying, and his sleep was restless and disturbed. The digestion was, however, good, the appetite fair, the bowels acted regularly, and the old uneasiness over the cæcum was not complained of.

I advised him to travel, but finding no immediate improvement he suddenly returned home. I then prescribed a long sea-voyage and with much difficulty he was persuaded to go to Australia. He returned much better in his general health, and the pain in the head was less intense, but he now began to complain of pain in the cæcum and ascending colon. This gradually augmented in severity until it was "not pain but agony;" nevertheless, he was able to walk about, and on some days seemed tolerably easy. The bowels were irregular; flatulence greatly distressed him and seemed to aggravate his sufferings. No medicine appeared to afford relief, although he thought large doses of bromide of potash tended to ease him temporarily. He somewhat improved, but when I last heard of him he had not recovered his former health.

Of the neuralgic character of the pain over the cæcum in this case there can, I imagine, be no room for doubt. The patient was first attacked with neuralgic pain of the head from which he suffered for many months. Then came his domestic trouble, which was followed by signs of nervous exhaustion; he became subject to sudden and groundless attacks of fear, in which he was convinced he was dying; he

lost all resolution, was incapable of managing his affairs, was unable to sleep, and still suffered from cephalalgia. When these symptoms somewhat subsided, the pain was transferred from the head to the cæcum, it was very variable in intensity, but when severe was described not as "pain, but agony." After a lengthened illness the symptoms gradually decreased, but had not disappeared when I last saw him.

Of all abdominal neuralgias I have found that of the colon the most intractable, but where it has originated from malaria, as is sometimes the case, it yields more rapidly to treatment.

Case 25.—A gentleman, aged twenty-nine, who had been nine years in India, suffered from malarial fever. After this subsided he became liable to attacks of excessive pain over the right side of abdomen, shooting into the back and down the thigh. He was sent home and placed under my care. The pain was referred to the region of the cæcum, but there was no tenderness; the appetite was tolerably good, although the bowels were somewhat confined. I could detect no evidence of disease either in the intestines, spine, thigh, or testis. He completely recovered under a course of quinine, along with some laxative medicine, and was able to return to his duties in India in perfect health.

CHAPTER VI

DIAGNOSIS AND TREATMENT OF ABDOMINAL NEURALGIA

Diagnosis.—There are few more difficult subjects of diagnosis than abdominal neuralgia. The practitioner has first to take into consideration all the various diseases likely to produce similar symptoms, and it is only by a careful exclusion of them, and after perhaps watching the case for some time that he is justified in coming to a decided opinion. It is impossible, therefore, to lay down rules for diagnosis, the utmost that can be done is to point out the diseases with which the complaint is most apt to be confounded.

It is often difficult to discriminate between this complaint and painful affections of the abdominal parietes. The most common of these are neuralgia of the spinal nerves and rheumatic affections of the muscles.

Intercostal neuralgia sometimes closely simulates that of the deeper structures. A young lady was referred to me for an opinion as a well-marked example of gastric neuralgia. She suffered intense pain at the catamenial periods, but was free from it in the intervals; there was no vomiting or other symptom of disordered digestion. On examination, a small and very tender spot was discovered

over the sixth intercostal nerve, and this was described as the seat of the suffering. There was no evidence of pain seated in the stomach.

The difficulty of diagnosis is increased when the nerves of the abdominal wall are implicated, and a spot a little to the left of the umbilicus is the most usual place to which the pain is referred.

A lady has frequently consulted me on account of a very severe pain in this position, which comes on at intervals of a few days, and is always accompanied by excessive headache. The attacks usually last for twenty-four hours, and then gradually subside. There is a very tender spot near the navel, and the spine of the vertebræ opposite to this is also very sensitive to pressure. She has for many years been a martyr to neuralgic pains in various parts of the body.

Rheumatism of the abdominal muscles is another source of difficulty, and judging from the cases given by various authors, I suspect that many of the instances described as neuralgia of the stomach were of this character. It is most apt to follow slight injuries or exposure to cold and wet; occasionally it is observed after pregnancy. The tenderness is superficial, the pain is increased by the slightest movement, is easier when the patient is in the recumbent position, is usually relieved by a bandage or an elastic belt, and the subjects of it have almost always suffered from rheumatic pains in other parts of the body.

Disease of any of the abdominal organs may, of course, give rise to pains of a neuralgic character, but those most apt to lead to difficulty in diagnosis are

ulcer or cancer of the stomach, aneurism of the abdominal aorta, and chronic inflammation of the peritoneum.

In an ordinary case of gastric ulcer the diagnosis is not difficult if sufficient care be taken. In it the pain occurs shortly after food, and is confined to the period whilst digestion is going on, the tenderness is localised and is increased by firm pressure; there is often vomiting, and blood may be rejected from the stomach or passed by stool. In gastric neuralgia the pain is worst when the stomach is empty and is relieved by food and stimulants; it varies its position from time to time, and may entirely disappear for days or weeks; the tenderness is general, and the pain is relieved by deep pressure; vomiting and hæmatemesis are absent.

In cancer of the stomach we have usually, in addition to the signs of ulceration, the presence of a tumour to guide us, and the patient rapidly loses flesh, strength, and colour to an extent we rarely observe in neuralgia.

There is no disease so apt to give rise to error as aneurism of the abdominal aorta. Of course, in the later stages, when a pulsating tumour is present, its detection is easy enough; but when this sign, as is often the case at an early period, is absent, great difficulty may be experienced. The whole of the lumbar region must be carefully examined by percussion and auscultation, the hand should be pressed as deeply as possible into the abdomen, and the strength of the pulse in the two femoral arteries should be compared

together. If there are the least grounds for suspecting the presence of an aneurism, of course the practitioner must decline to give a decided opinion on the case until he has had time to watch its progress.

Occasionally chronic peritonitis begins in such an insidious manner that pains of a neuralgic character are the only symptoms. I saw a young lady who had no complaint excepting occasional pain of the abdomen, increased somewhat on exertion. Her digestive powers were in a normal state; there was no quickening of the pulse, no fever, no tenderness on pressure, and nothing could be discovered by a careful examination. I suspected that she was suffering from abdominal neuralgia, but in the following year I was requested to visit her in the country, and found her dying of tubercular peritonitis. She stated that the pain had increased in severity, diarrhœa had come on, slight at first, but gradually becoming more frequent; the appetite had failed, and the other symptoms of the disorder had developed themselves.

Cancer of the peritoneum in its earlier stages sometimes exhibits pain as the only symptom, and this may be so variable, so little connected with the period of digestion, so unaccompanied by tenderness, vomiting, or loss of flesh, that the practitioner is inclined to attribute it to neuralgia. In the later stages the occurrence of dropsy and, in some cases, the detection of a few small nodules through the vagina or rectum will enable a diagnosis to be established. I was on the point of discharging from the hospital a patient suffering from this disease, as a

malingerer, when fortunately a little fluid was observed in the abdomen. The symptoms gradually became more distinct, and I was eventually able to diagnose cancer of the peritoneum, the correctness of the opinion being confirmed by a post-mortem examination.

Treatment.—Although the complaint is usually tedious, it almost always ends in perfect recovery. As a general rule improvement takes place gradually, the pain diminishing in severity, and the attacks becoming less frequent.

In commencing the treatment, any local or general disorder that may be present must be first removed, and by this means alone the patient is often restored to health.

Constipation is a prominent symptom in many cases, and where there is no nervous depression and the evacuations are much disordered, one or two doses of calomel, followed by castor oil or some other aperient, are usually productive of great benefit. But when the patient is feeble it is wiser to employ less irritating medicines, and a mild electuary of senna or an enema will produce better results. In all cases of chronic constipation it is advisable to maintain a free action of the bowels, and nothing is more useful for this purpose than a dinner pill composed of sulphate of iron, aloes, and extract of belladonna. As the bowels recover their tone the amount of the aperient should be lessened and that of the iron increased.

Acidity after meals is often a very troublesome

symptom, and is best treated with liquor potassæ, or the alkaline bicarbonates. The depressing effects of these remedies should be remembered, and either a small dose of cinchona should be added, or the alkalies may be exchanged after a short time for one of the mineral acids.

Some cases are complicated with diarrhœa, and the mildest aperient may then intensify the neuralgia; under such circumstances bismuth in combination with magnesia or soda, and a small dose of morphia is most useful. Where bismuth does not agree the decoction of logwood often answers well.

Wherever there is reason to suspect the patient has been exposed to malaria quinine should be exhibited. It is more especially useful when the pain showed a tendency to periodical exacerbations, but it often requires to be given with a liberal hand. A few weeks ago I saw a lady suffering excessively from abdominal pain, which was so severe that she was unable to turn in bed. Quinine had been given in two- or three-grain doses without effect, but I suggested that ten grains should be administered three times a day. She made a rapid recovery and is now able to take exercise without suffering. In the more chronic cases, arsenic is invaluable but it should be commenced in small doses and be persevered with for a length of time. When it fails to relieve, it is usually from the patient refusing to continue it, from being disappointed at more rapid improvement not taking place, so that it is wise to warn him on this point before the treatment is begun.

When a history of gout can be obtained, colchicum is of use, but its effects must be carefully watched. It is best given at first with alkalies, but after a short time it should be combined with ammonia, bark, or quinine. The dose should be a moderate one, lest the patient's strength become depressed.

Local applications are invaluable. Where the pain is very severe the subcutaneous injection of morphia is requisite, but it should be borne in mind that it only allays the suffering for a time. I saw a case lately in which half a grain had been injected ineffectually two or three times a day for many weeks, but which was rapidly cured by large doses of quinine. In others, the application to the abdomen of small blisters dressed with morphia is useful; sometimes aconite or belladonna liniment, or an opiate or belladonna plaster succeeds where other applications fail. As in cases of neuralgia in other parts of the body, the practitioner must not be disappointed at the failure of any local application, but must try one after the other, until the desired result is obtained. I have often found an elastic belt to the abdomen, or a bandage of silk or flannel of great service in alleviating the pain.

As soon as partial relief is obtained nothing is so useful as a change of air. The sea-side generally answers, but if the weather is unsuitable for it, an inland place that is dry and sheltered from the east and north-east winds may be selected.

CHAPTER VII

ECZEMA OF THE STOMACH

In Case 22, quoted in a former chapter, it will be observed that along with the gastric neuralgia acidity was a prominent symptom. This was, however, evidently not the cause of the suffering, for it usually ceased after a week or two, whilst the pain remained unabated. The co-existence of neuralgia of the stomach with an increased or altered secretion of the organ is not unusual. For example, I saw a gentleman, about sixty years of age, who had been subjected to severe losses in business, and who was consequently much depressed in mind; every evening at about six o'clock he was attacked by excessive pain in the region of the stomach, attended by a discharge of acid fluid. The complaint continued for many months, was not relieved by treatment, but eventually subsided spontaneously.

An increased secretion from a neighbouring gland is often remarked along with neuralgia. For instance, we see a flow of tears, or of saliva, sometimes accompanying facial neuralgia, and the vomiting of a large quantity of a very acid fluid is a common

symptom in colic produced by the passage of a gall-stone.

I wish to draw attention to a class of cases in which the severity and obstinacy of the pain would lead us to believe it to be of a neuralgic character, but where excessive acidity is also a prominent symptom. These cases seem to arise from some constitutional cause, inasmuch as they are either accompanied or replaced by eczema of the skin, or some of the other mucous membranes show a liability to inflammatory action. When the latter occurs, the pain and smarting of the affected part is out of all proportion to the amount of inflammatory redness, so that we may assume the same to be the case when the lining membrane of the stomach is the seat of the mischief. In most of the instances that have come beneath my observation there has been a history of gout, or the urine has habitually contained an unusual quantity of lithic acid.

It will be remarked that in the first two of the fol lowing cases the eruption on the skin was severe, and its alternation with the epigastric pain had attracted the notice of the patients. I have seen others similar to them, and one patient was in the habit of calling the eruption on the skin his "safety valve," for as soon as it appeared, the pain of the stomach was relieved.

Case 26.—Mr. T—, aged thirty-three, consulted me in March, 1874. He had been suffering for four months from severe pain in the epigastric and umbilical regions, shooting through to the back. The pain was of an aching character, was relieved by food, but came

on more intensely about two hours afterwards; there was none early in the morning nor during the night. He had neither nausea nor vomiting, excessive flatulence was complained of; the pain was not relieved by an emetic; the tongue was rather foul, but the bowels were regular. For fourteen years he had suffered once or twice a year from severe eczema of the hands and other parts of the body, and he stated that the epigastric pain always preceded this, and was immediately relieved when the eruption made its appearance. His diet was carefully regulated and liquor potassæ prescribed.

In April the pain was easier, but the tongue had become very sore, and was covered with raw patches. No eczema had appeared.

In May the pain was reported as having disappeared, but both hands were now covered with an eruption of eczema which was very painful.

In July he again consulted me. The eczema had gradually died away, but the pain in the stomach had again made its appearance and was very severe. I lost sight of him in November, 1874, the complaint having gradually subsided under a strictly milk diet, and a course of the liquor potassæ.

Case 27.—Mrs R— consulted me in 1873 on account of violent pain in the chest and epigastrium, increased by food; she suffered excessively from flatulence, but had no vomiting. Severe attacks of a spasmodic character came on from time to time, attended with great exhaustion; the bowels were regular, but the

urine was loaded with lithic acid. On her next visit she reported that the pains suddenly disappeared as soon as a rash of eczema had shown itself on the body and limbs. She had been liable to this alternation of the pain and the eruption for many years.

In the above cases the chief symptoms seemed to be referable to catarrh of the stomach, but in both the gastric disturbance disappeared as soon as the eruption made its appearance. It is, I think, fair to conclude that the inflammatory affections of the skin and mucous membrane were similar in their character, and were owing to the same constitutional cause. In the first it will be observed that the tongue became sore and inflamed in patches before the appearance of the skin eruption, and it is reasonable to suppose that if we could have inspected the lining membrane of the stomach, we should have found on it a condition analogous to that of the tongue and skin.

In the next case, which I had the opportunity of observing for many years, the eruption was also present, but its appearance had no apparent effect upon the condition of the stomach. The vagina and the throat were, however, inflamed in succession without any apparent cause.

Case 28.—Mrs D—, about forty-seven years of age, consulted me in January, 1875. She was a married woman without family, and had formerly suffered severely from neuralgia, chiefly affecting the head and face.

She complained of a constant aching and smarting feeling of the stomach. It occurred in the night as well as the day, often entirely prevented sleep, and was particularly severe in the early morning before breakfast. "The stomach felt as if it was raw," and the same sensation extended up to the throat. She had often excessive acidity, and the pain was worst when this was present. Alkalies somewhat relieved the smarting sensation, but the aching pain still remained after the former has disappeared.

The suffering was increased by walking, but it did not leave her when she lay down. It was often temporarily relieved by food, especially by solids, but afterwards became worse, and was usually most intense about three hours after a meal. Food containing fat or starch increased it, whilst bread or vegetables never failed to bring on acidity, and a consequent exacerbation of the smarting. The tongue was rather white; she had no thirst; the appetite was good; the bowels very irregular, at one time confined, at another relaxed. The use of an enema always increased the severe pain. She had no vomiting, and never had suffered from hæmatemesis nor had passed blood by stool.

There was a general sensitiveness of the epigastrium, but no localised tenderness on deep pressure. The pulse was unaffected, the urine acid, not albuminous nor saccharine. The catamenia had ceased for one year, and had been gradually lessening in quantity for the last three years.

Two years before she consulted me she had been subjected to great care and anxiety. She had at first

felt no ill effects, but three months afterwards was suddenly attacked with severe pain of the right hypochondrium darting into the shoulder, but unattended by vomiting. This lasted three days, and was not followed by jaundice. She was told that she suffered from congestion of the liver, and was severely salivated by the medicines prescribed for her.

When she recovered, pain of the epigastrium attended with constipation came on. She obtained no relief from medical treatment, and a hospital physician was consulted, but the remedies prescribed proved unavailing. Acidity and flatulence gradually followed, and another physician was called in, who placed her on a diet of asses' milk, whey, and beef tea. As her sufferings increased in severity, all food by the mouth was prohibited, and nutritive enemata were given to sustain her strength. She stated that this plan was strictly carried out for nearly three months, when she became so exhausted her friends were informed it was impossible she could recover. As soon as she heard this she asked for some bitter ale which she drank greedily, and from that time commenced to take solid food and stimulants. She partially regained her flesh and strength, but the pain and other dyspeptic symptoms persisting, she placed herself under my care.

From the long duration of the case, the absence of any tumour, of vomiting, or hæmatemesis, and from the improvement in the general health that had lately occurred, it was evident that her symptoms could not be attributed to cancer of the stomach. Simple

ulceration was improbable from the long continuance of the pain, and its aggravation by liquid food, and even by the withdrawal of all nourishment by the mouth. I therefore prescribed "Brandish's alkaline solution," directing that the bowels should be kept gently open by means of a mild electuary of senna and jalap. In order still further to check the formation of acid, I recommended that a decoction of taraxicum should be taken instead of tea or coffee, and gluten bread should be substituted for the ordinary wheaten bread. All vegetables were prohibited, and a small quantity of roast mutton alone allowed. Under this treatment the acidity disappeared, the pain lessened in severity, and her general health quickly improved.

In two months time she reported that the pain had diminished so as to be only a sensation of uneasiness, but there was a distressing feeling of pulsation at the epigastrium. The urine was very acid, and deposited a large quantity of lithic acid. A bandage wet in a solution of soda and covered with oil silk was ordered to be worn around the abdomen, the internal use of the alkali was omitted, and carbonate of iron prescribed in its stead.

The following year I saw her again. The pain was now comparatively slight, but when worst it was attended by severe throbbing in the epigastrium, and the pain and acidity always increased as soon as the gluten bread was omitted. There was a distinctly tender spot of small size, just below the right hypochondrium, but the general epigastric tenderness had disappeared.

Two years later Mrs. D— again came under observation. She now complained of a general eczematous eruption over the abdomen and thighs, to which she stated she had been formerly subject. The pain of the epigastrium was still occasionally present, but was comparatively slight. The alkaline treatment was again prescribed.

Two months later the eruption had disappeared, but the patient complained of an incessant burning of the throat, and a severe and constant pricking of the tongue. The other mucous membranes seemed to participate in the disorder, for she had also intense tenderness of the vagina with considerable mucous discharge.

I lost sight of her again for many months, but latterly she has again consulted me. The throat was relieved but it still caused great inconvenience by a sensation of soreness and dryness, whilst the pricking feeling in the tongue was incessant, and she was haunted by fear of paralysis. The pain in the epigastrium and the acidity had returned, although to a much less degree than formerly.

The above case agrees with the two preceding it in the occurrence of eczema, but the mucous membranes were more severely affected. It is probable that the gastric symptoms, as well as the inflammation of the skin, throat, tongue, and vagina, were all the effects of a common constitutional cause.

The many points of similarity with some of the former cases induced me to include the last under the head of nervous disorder, although it is plain that

there was in it a co-existing inflammatory action of the mucous membranes. That the disease was chiefly due to a disturbance of the nervous system seems to be supported by the following facts.

The first symptoms followed closely on great mental distress, the pain, which was excessive, was not relieved by a liquid diet nor by abstinence from all food for a considerable period, and the first signs of improvement followed the use of bitter ale, and a removal to the seaside. The increased pulsation of the abdominal aorta was a prominent symptom throughout the case, and was another indication of disturbance of the nervous system. It will be also remarked that although, as in Case 22, acidity was present, and added greatly to her sufferings, its disappearance did not entirely remove the pain. What effect the free use of mercury had in increasing the malady I am unable to say, but it was probably very injurious.

Some authors have observed that persons affected with eczema are also liable to inflammation of the bronchial and other mucous membranes, which often seems to be substituted for the eruption, and I have no doubt that this is much more frequent than is generally supposed. I saw a gentleman lately who had suffered from eczema of the whole body three or four years ago, attributed to distress of mind after the death of his wife. The complaint gradually subsided under treatment, but was almost immediately followed by chronic inflammation of the membrane of the nose and throat, accompanied by a total loss of smell and taste. Under the use of an inhalation of creasote and

tonic treatment the catarrh declined, and the smell and taste quickly returned.

Eczematous inflammation of a mucous membrane seems to differ from ordinary catarrh in the affected part being less red and swollen, the discharge being more profuse and irritating, and the sensibility augmented, so that where no severe pain is present there is itching, smarting, or some other abnormal sensation. I suspect that the excessive suffering in the cases of gastric eczema I have before mentioned arises from this hyperæsthesia, together with the effects of an irritating discharge upon the mucous membrane. It will be remarked that the pain in them was worse when the stomach was empty, and was relieved by food. This, no doubt, was from the fresh meal provoking a secretion of normal gastric juice that diluted the secretion poured out by the eczematous inflammation.

In all probability gastric eczema may arise, as when the skin is affected, from a variety of causes; but most of my patients presented evidences of gout, or were hereditarily predisposed to that disorder. In all of them the urine was at one time or another loaded with lithic acid.

It is difficult to resist the idea that the peculiarities of the inflammation may arise from the blood also containing lithic acid, and that the inflammatory action is in turn aroused in different parts according as some irritation is applied to them. I saw a gentleman lately who, three or four years ago, suffered from dyspepsia that resisted all other treatment, but which

rapidly subsided after a few doses of colchicum. Next year, after exposure to cold, he was attacked by bronchitis and asthma, and on my inquiring whether he had ever suffered from any eruption, he showed me a patch of eczema that had formed upon his leg. Here were three surfaces inflamed in succession, and nothing but a general cause seems capable of explaining the circumstance, and that cause, from the beneficial effects produced by colchicum, would seem most likely to be a gouty constitution.

CHAPTER VIII

TREATMENT OF ECZEMA OF THE STOMACH

Cases of this kind are always tedious and often very rebellious to treatment. Not unfrequently, when the symptoms at first rapidly subside, they will recur from time to time without any apparent reason, as in other forms of gouty inflammation.

The most important point is to ascertain whether all the excreting organs are performing their functions in a normal manner. Where the tongue is foul, the evacuations disordered, and the urine high coloured it will be necessary to commence with a few doses of calomel or blue pill, along with a saline aperient. If the skin is harsh and dry nothing is more useful than the Turkish bath; when the urine is scanty, alkaline diuretics must be prescribed.

As soon as this first indication has been attended to, it will be advisable to give alkalies, provided that the case is recent or the suffering severe. I have not found the alkaline carbonates of much value, and greatly prefer the liquor potassæ, or "Brandish's alkaline solution." They should be given, well diluted, three or four times a day, when the stomach is empty, and may be advantageously combined with

bromide of potash or small doses of morphia; henbane, hydrocyanic acid, and other sedatives, have seemed to be useless. In less severe cases glycerine of carbolic acid (in doses of ten minims) or creasote may be employed, but these are rarely of value when the acidity is excessive or the pain severe.

Where there is a well-marked history of gout colchicum is indicated; indeed, it is always worth trying this valuable remedy unless some contraindication is present.

In the later stages tonics may be prescribed, but great caution is required in beginning with them. Frequently I have observed that the tongue becomes foul, and the pain is augmented as soon as they are commenced. Arsenic in small doses answers best, and may be combined with liquor potassæ; in other cases small quantities of the liquid extract of bark may be used.

The bowels are generally confined, and moderate doses of podophyllin, along with rhubarb and the compound extract of colocynth, are useful, or it may be combined with the extract of colchicum. The purgative mineral waters are less successful, excepting at an early period of the case.

External applications, that are so useful in pure gastric neuralgia, are of little value in this form of the disease. I have seen the patient's distress greatly aggravated by the irritation excited by a weak liniment of croton oil, and even blisters are apt to produce troublesome eruptions.

The diet always requires careful regulation. Tea

and coffee must be forbidden, but the decoction of dried taraxacum root, flavoured with a little coffee, often answers a good purpose. In severe cases the ordinary bread should be given up, and gluten bread used instead, and I have known this alone afford great relief. Sugar and food composed of starch must in all cases be taken with caution.

Mutton usually agrees best with patients suffering from gastric eczema; it should be eaten slowly and well masticated; beef, pork, and veal almost always increase the pain. Much liquid also seems to aggravate the suffering, and, therefore, the diet ordinarily prescribed for a patient with gastric ulcer rarely fails to prove prejudicial. Poultry, game, and some kinds of fish, are usually digested without much difficulty.

If possible alcohol should be avoided. Wines and malt liquors, from their tendency to become acid, scarcely ever agree, but if stimulants are necessary small quantities of well diluted brandy or whiskey, may be allowed.

CHAPTER IX

NEUROSES OF MOTILITY

These are the most common and the best known of the neuroses of the stomach, but they often present considerable difficulties both in their diagnosis and treatment. The most usual deviations from the healthy condition are — spasm, eructation, and vomiting.

Spasm of the Stomach

Spasm of the stomach is a common accompaniment of all forms of dyspepsia occurring in persons of a nervous temperament. It probably arises from a closure of the cardiac orifice preventing an escape of gas from the organ when it is distended with the products of fermentation. An attack is usually preceded by a sense of weight upon the chest, or a feeling of constriction, arising from imperfect digestion of the food. It generally comes on a few hours after a meal, especially during the night, when an escape of the gaseous contents of the stomach has been prevented by the recumbent position of the patient. It may be accompanied by ineffectual efforts at eructation or

vomiting, but even when an escape of some of the contents of the organ takes place, relief is not necessarily obtained.

The severity of the attack depends much upon its duration. Where it passes away quickly pain may be the only symptom, but where the spasm is long-continued and severe, other organs of the body are liable to be implicated. Thus, the action of the heart may become feeble and irregular, the pulse weak and fluttering, the face covered with perspiration, the extremities cold, and the respiration laboured and difficult. The patient sits upright, or rolls from side to side, in vain attempts to gain relief from the agonising pain with which he is affected. The epigastrium feels hard and distended, and is very tympanitic on percussion. I have seen the suffering so intense, and the collapse so sudden and severe, that I have doubted whether the patient were not suffering from perforation of the peritoneum. In some instances the attack disappears as suddenly as it came on, but more generally it subsides gradually, and the patient is restored to his former health.

Treatment.—The prevention of spasm of the stomach requires the removal of any morbid condition that may be present, and that is capable of giving rise to an imperfect digestion of the food. It must be borne in mind that the patient is almost always of a nervous temperament, and that if aperients are requisite, they should be combined with a stimulant or antispasmodic. The diet must be carefully regulated,

and effervescing liquids, as well as articles of food that are liable to ferment, such as uncooked fruit and vegetables, wines and malt liquors, must be prohibited.

During an attack, if it be of moderate severity, an alkali, combined with a stimulant and sedative is usually sufficient to afford relief. For instance, a dose of soda or magnesia, with chloroform or ether and morphia, is generally preferred. In the more severe cases the subcutaneous injection of morphia is requisite, and if the heart is much depressed ammonia or brandy may be given, either by the mouth or in an enema.

The application of heat and warmth to the epigastrium is always of service, and flannels wrung out of hot water and sprinkled over with laudanum or turpentine are favourite remedies. In some cases a mustard plaster, or, where the pain resists other treatment, a hot bath is efficacious in affording relief.

Eructations.

Eructation is a common symptom of dyspepsia, and is especially apt to occur to an excessive degree in females about the time of the cessation of menstruation. It is usually associated with flatulence, constipation, and other signs of feeble digestion, and it often proves very rebellious to treatment. But it may also occur in the young, as a purely nervous symptom, and is then apt to be very obstinate. I lately saw a lady, twenty-two years of age, who had suffered from constant

eructations during the day time for nearly a twelve-month. The attempts to expel flatus from the stomach were incessant and most distressing, and the only time they ceased was during sleep. She had some acidity and occasional heartburn, the catamenia were regular, and in other respects she seemed in good health. She was treated with iron during the day, and a slightly aperient pill each night, and had greatly improved when I last heard of her.

Nervous eructations may also occur as the result of malaria, although they are a rare manifestation of its effects. In the following curious case they were replaced by hiccough, and both evidently proceeded from the same cause.

Case 29.—Mrs. L—, forty-three years of age, is a native of St. Petersburg. She looks very weak and emaciated, and is of a sallow complexion. She has frequent attacks of severe hiccough, often lasting without intermission for two or three days, and attended with violent neuralgic pain of the head and epigastrium. She has been treated with small doses of nux vomica and sedatives, but when the hiccough is relieved the pain of the stomach increases in severity.

She states that at ten years of age she suffered severely from ague, which lasted until the age of twelve, but was followed by constant eructations that proved rebellious to all treatment. After some time this symptom yielded, but was replaced by hiccough and attacks of an hysterical character.

As she had only lately returned from St. Petersburg,

and I had reason to believe the hiccough was of malarial origin, I prescribed small doses of arsenic, and when I last heard of her she was much improved, although not quite recovered.

Although, as will be afterwards shown, persistent vomiting attended with great emaciation may be produced by malaria, this is the only case of severe eructations from this cause that has fallen under my notice. It may be considered doubtful, from their being replaced by hiccough, the attacks of which were always accompanied by neuralgia of the head and stomach, whether they were not of purely hysterical origin, the malaria only giving rise to the complaint secondarily by enfeebling the general health.

Nervous vomiting.

Nervous, or as it is more generally termed, hysterical vomiting is so commonly met with that it is unnecessary to give any examples of it.

It occurs shortly after a meal; so quickly, indeed, in many cases that the patient is forced to leave the table. It is not attended with nausea, and does not take place when the stomach is empty. What is rejected is usually tasteless, but when the vomiting occurs some time after eating it is sour, from the food being more digested. In many cases, although this is by no means necessary, this form of vomiting is accompanied by a sensation of weight or uneasiness

after eating, flatulence, and other signs of dyspepsia. The bowels are almost always greatly constipated.

It is evident that, although vomiting may occur at every meal, only a portion of what has been taken is rejected, for there is no great loss of flesh or strength. Not infrequently the patient looks unusually healthy and robust, very different from the emaciated and cachectic subjects of gastric ulcer. There are usually other manifestations of hysteria, such as the sensation of a ball in the throat, difficulty of swallowing, or palpitation. The catamenia are in most instances disordered, often absent, but at times they are more frequent than usual, and excessive in quantity.

Treatment.—The treatment of this form of vomiting is often very unsatisfactory, and the patience both of the friends of the patient and of the practitioner is generally severely tried before a cure is effected. This chiefly arises from so little care being usually taken to discover the condition that has produced or is keeping up the irritability of the stomach. It is too frequently regarded as sufficient to call the case one of "hysterical vomiting," and to subject the patient without further inquiry to a succession of nervine tonics.

I need not point out that vomiting unattended with any other signs of disorder of the stomach is a symptom of many serious maladies. Thus, it is common in diseases of the brain, liver, and kidneys, and may, by the notice it attracts, mask the indications of the more serious disorders from which it arises. It is,

therefore, necessary, in every obstinate case of vomiting, that the practitioner should carefully investigate the state of all the more important organs of the body before he determines that he has only a nervous affection to deal with.

In a considerable number of the cases of hysterical vomiting there is some disorder of the uterus or ovaries, and it is vain to pay attention to the gastric disturbance until the original cause is overcome. A young woman was admitted into the London Hospital suffering from vomiting, which had resisted for a length of time the most varied treatment. On examination ulceration of the os uteri was discovered, and the ordinary treatment being adopted the gastric disturbance entirely ceased. A young lady was brought to me for obstinate and long-continued vomiting. It had come on suddenly, and I suspected from the history that it depended on some uterine disorder. Displacement of the organ was discovered, and as soon as this was relieved the vomiting ceased spontaneously. In every case, therefore, the state of the uterine functions should be investigated if no other cause is apparent.

But a still more common cause of hysterical vomiting is an overloaded condition of the rectum and lower part of the colon. It has been already shown that in anorexia nervosa the special sensation of the stomach is in fault, and, in a similar manner, in many cases of hysteria the sensation that indicates the necessity of expelling the fæces is lessened or abolished. It is, in fact, analogous to that loss of

sensation in the bladder in young females that so frequently allows the organ to become over-distended so as to require the employment of the catheter. But an obstruction of the lower part of the intestinal canal usually leads to vomiting, and in this way the symptom originates in a large number of cases.

Case 30.—A young lady was referred to me as a most obstinate case of hysterical vomiting, that had resisted innumerable tonics and other methods of treatment. On examination the rectum was found to be blocked up with fæces, and great trouble was experienced before it could be cleared. The normal sensation was so diminished that the ordinary enemata failed to produce any result, and eventually a daily injection of aloes had to be employed. Under this treatment the vomiting rapidly subsided, and she regained her former health.

After the bowels have been freely cleared, it is necessary to retain them in action, and nothing is so valuable for this purpose as the daily use of a pill composed of aloes, sulphate of iron, and the extract of nux vomica. As the intestine regains its powers, the quantity of the aperient should be gradually lessened, whilst that of the iron is increased.

In all cases the improvement of the general health is a matter of the utmost importance. Fresh air and exercise are the best tonics, and we constantly see patients who have resisted the most careful treatment

in the wards of a hospital, recover quickly in the freedom and air of the country.

Sea bathing is invaluable, and when it cannot be obtained a cold bath in which salt is mixed should be employed as a substitute. In other cases travelling, especially in a mountainous country, tends to remove the complaint and prevent its recurrence.

The diet should be entirely different from that given to persons suffering from gastric ulcer. I would especially insist upon this, as I have seen the vomiting so frequently increased by partial starvation. Solids agree better than liquids, and small and frequent quantities of food are preferable to larger and distant meals. Some form of alcoholic stimulant is generally useful; porter or bitter ale being the best. Tea and coffee should be forbidden, and milk or milk and soda-water substituted.

Various methods have been recommended to prevent the vomiting temporarily. Some advise that the patient should suck small pieces of ice for a short time before each meal, others that a draught of morphia and hydrocyanic acid should be given before food. The former is rarely successful, the latter is useful in the vomiting of phthisis, but is scarcely necessary in hysterical vomiting, where enough food is usually retained for the requirements of the system. The best plan is to let the patient eat only a little at a time, and if the vomiting occurs, let her take a further amount as soon as the gastric irritability has subsided.

Malarial vomiting.

There is another form of nervous vomiting which, as far as I know, has not attracted the notice of practitioners. It occurs in persons who have been long exposed to malaria, and often makes its appearance when no other evidences of malarial poisoning are present. It is probably from this reason that its true nature is so commonly overlooked.

The vomiting is at first only in the early morning or after breakfast, and does not trouble the patient in the subsequent part of the day. By degrees it becomes more constant, occurring directly after every meal, and especially after solid food, and even awaking him during the night; sometimes the food is described as sticking in the lower part of the chest, and the patient is uneasy until it is rejected. The appetite is bad, extreme debility is always present, there is rapid loss of flesh, the skin is sallow, the lips bloodless, the expression anxious, and the appearance of the patient is so cachectic that the practitioner expects to find a carcinomatous tumour in the epigastrium. I have myself diagnosed cancer of the stomach in such cases, and have seen a similar mistake made by others, and this is the more excusable, as the vomiting is often most intractable, and the patient seems rapidly to lose ground in spite of all the ordinary treatment adopted to relieve him. When the nature of the malady is clearly appreciated, and quinine or arsenic employed, the vomiting usually subsides, and improvement in the general health is rapid and striking.

The following cases are examples of this form of nervous vomiting depending on malaria.

Case 31.—In 1874, Captain L—, aged thirty-five, was referred to me for an opinion as to the nature of his disease. He was exceedingly thin, had a haggard expression of face, and the pale yellowish colour so commonly seen in cases of cancer of the stomach. Loss of flesh had gone on gradually for the last twelve months, during which time he had decreased two stones in weight. He was very feeble and was incapable of taking even a moderate amount of exercise.

His chief complaints were loss of appetite and excessive flatulence. All solid food seemed to stick at his chest and caused a sensation of uneasiness, which was followed by vomiting, but he could swallow liquids tolerably well. He had, however, no severe pain after food of any kind, and none in the back. He vomited, every morning directly after breakfast, but what was returned was not the food he had lately swallowed but about a wine-glassful of mucus. He never vomited between meals, but was much annoyed by his mouth frequently filling with clear water during the night. The tongue was clean, the bowels were regular, the urine natural; the pulse was normal, usually 72, and he had no increase of temperature.

There were no physical signs indicating disease of the heart, lungs, or liver, but there was a sensation of fulness in the epigastrium, and at this part deep pressure produced slight pain.

The patient attributed his complaint to jungle fever

from which he had suffered severely in India during the years 1870 and 1872. In 1871 he had complained of pain of the shoulder and side, which was supposed to be due to some disorder of the liver. In 1873 he had a long and severe attack of sciatica which, however, subsided before his present illness had made its appearance.

The patient's diet was carefully regulated, and alkalies and aperients were prescribed, but without any advantage. I saw him a few times, but the vomiting increased in severity, and took place immediately after every meal.

In June, 1875, he again consulted me, and although he had not gained flesh his colour was much improved. He had lost the very anæmic appearance he formerly presented, the uneasiness after solid food was less, and the vomiting not so constant or severe. In February, 1875, he had been attacked with rigors, followed by sweatings, for which he had taken quinine freely, and he had since improved in his digestion. He had vomited a small quantity of blood one morning which he thought gave him some relief. I ordered him some pepsin and quinine and restricted him to an entirely liquid diet.

He again presented himself in 1877. After his last visit he went to the Cape of Good Hope, where he travelled for many months in the interior. He was able to eat any kind of food, and his symptoms entirely disappeared. He had gained two stones in weight, and could easily walk twenty miles.

In 1878 he again called on me. He had been

attacked by ague, which was followed by piles, for which he had been freely leeched. The vomiting had immediately reappeared, and there was a little uneasiness after solids. He was recommended to take quinine, and I have not since heard from him.

Case 32.—Dr. K—, aged forty, consulted me by letter from India on account of symptoms of disordered digestion, with which he had been for some time affected.

In 1873 he had a slight attack of fever which soon passed away. In 1874, without any apparent reason, his appetite began to fail and he took a dislike to various kinds of food to which he had been previously partial. Three months after this, without any premonitory symptoms, he experienced a sensation of intense nausea attended by a very copious flow of a watery fluid from the mouth. This passed away without vomiting, but attacks of a similar kind recurred frequently, and at irregular intervals. Sometimes during the night "he would awaken after having dreamed of some disgusting sight or smell, and found the saliva flowing profusely from his mouth, attended with an overpowering sense of nausea." He often vomited in the daytime a horribly bitter and sour fluid. There was no fever and no diarrhœa, but the patient felt generally out of sorts, had intense depression of spirits, and remarked that he was very rapidly losing flesh and strength.

The vomiting gradually increased, so that he was unable to take wine or any other stimulant, without

its being rejected, especially when the stomach was empty. He was generally more comfortable for the first few hours after meals, and latterly the vomiting only occurred when the stomach was empty, especially between three and five in the morning. He never suffered from any symptoms of fever, but "frequently used to fancy he had pain or uneasiness in the liver or between the shoulders." The bowels acted freely but not excessively.

His general health became so much impaired that he was ordered home. He had an attack of what was supposed to be sunstroke in the Red Sea, and I saw him a few days after his arrival in England.

He was exceedingly feeble, and so very anæmic that it might have been supposed he was recovering from some severe hæmorrhage. He was scarcely able to sit up, the appetite was bad, but the vomiting had entirely ceased. Within a week or two after his arrival he had a well-marked rigor and sweating every day, although when in India he had not latterly suffered from any symptoms of malarious fever. These disappeared under the free use of quinine, and his health rapidly improved. In the course of two or three months he quite regained his former strength and colour, and no signs of gastric disturbance have since that time manifested themselves.

In both of these cases there was a copious flow of saliva or of a watery fluid from the stomach, in addition to the vomiting. In the first all solid food produced a sensation of uneasiness, whilst in the second

partial relief was obtained by eating, after the complaint had existed for some time. Both patients were greatly reduced in strength and flesh, and it is this rapid deterioration of the general health, out of all proportion to the vomiting, that chiefly impresses the practitioner, and leads him to conclude there must be some serious organic disease.

It will be remarked that attacks of intermitting fever showed themselves after the vomiting had lasted for some time, but that they were not present at the commencement of the illness. Indeed, in the second case a malarial origin was not suspected by the patient himself. I think it will be found that the gastric affection is most apt to attack persons in whom the ordinary symptoms of fever do not occur, and as an illustration of this I have appended the following:

Case 33.—Mr. A—, aged thirty-four, consulted me in 1873. He had lived in tropical climates for fourteen years, and for the previous twelve months had suffered from slight attacks of fever. His present illness commenced with great debility and disinclination to active exertion. These symptoms were shortly followed by vomiting, which occurred only on awaking in the morning. During the day he was free from it, but suffered from excessive flatulence and distension after food. The bowels were regular, and no physical signs of disease of the liver or spleen could be detected. He was treated with quinine; the vomiting quickly subsided, and he left England in good health.

He had occasion to go to Damascus in 1874, and when in a malarious district suddenly fainted, which was followed by unconsciousness. Similar attacks returned at irregular intervals, but gradually left him after treatment with quinine.

In 1877, having resided in England since the last-mentioned date, he was suddenly seized with giddiness and a sensation as if he was dying, followed by violent palpitation. Attacks of a similar character recurred at regular intervals of twenty-four hours, mostly at ten at night, but the pulsation was referred rather to the epigastrium than to the cardiac region. After being subjected to various kinds of treatment without avail, he again consulted me, and soon regained his health under the free use of quinine. At present he remains perfectly well.

The attacks from which this gentleman suffered were very puzzling, as he was unable accurately to describe his sensations. He referred the feeling of pulsation to the stomach, but this was quickly followed by intense nervousness and dread of immediate death. There was no rise in temperature during the palpitation, and the true character of the ailment was overlooked by several able practitioners. His having formerly suffered from vomiting as a manifestation of malarial fever convinced me that his gastric attacks also arose from the same cause, and their regular return at the same hour, and their disappearance under quinine, justified the correctness of the diagnosis.

Treatment.—It is scarcely necessary to say that the treatment of this sort of vomiting is the same as that required for other manifestations of malarial disease. In the most severe cases quinine in large doses is requisite, and where it is rejected by the stomach it should be administered in an enema. When the symptoms are less urgent, it is advisable to combine the quinine with some saline aperient, such as the sulphate of magnesia, or sulphate of soda. In very chronic and obstinate cases arsenic is indicated, but I have not found it so useful in this form of malarial poisoning as quinine or cinchona.

CHAPTER X

NEUROSES OF THE VASO-MOTOR SYSTEM

We have already seen that the secretion of the stomach, which is under the control of the vaso-motor system, is liable to be increased in various neurotic affections; in some of the cases of gastric neuralgia, for example, the pain was accompanied by excessive acidity. Whether the augmented secretion arose from the nervous affection, or both were the result of a general cause, such as gout, is a question we are at present incapable of satisfactorily answering. In the neuroses of motility we also observed that an increase in the quantity of acid secreted was a prominent symptom. But not only alterations in the secretion, even catarrhal inflammation of the stomach, may arise from a morbid action situated in other and distant organs; thus, we not unfrequently see vomiting of enormous quantities of mucus during menstruation, no signs of disturbed digestion being present in the intervals.

The following case shows that the result of the vaso-motor disturbance is not necessarily limited to an increase in the quantity of mucus, but that such an

amount of congestion may be produced that large quantities of blood shall be rejected from the stomach.

Case 34.—Miss B—, aged thirty-five, had been weak and generally out of health for some months before I saw her. She had been greatly tried by long-continued fatigue in nursing a relation, and was consequently in a very exhausted condition. The catamenial discharge was regular but profuse, and the patient suffered severe pain of the back and vomiting at its commencement. In the course of a few months the vomiting at each period increased in duration and severity, and large quantities of a thick slimy mucus were rejected from the stomach.

On one occasion the mucus was remarked to be of a dark colour, which proved on examination to be due to the presence of blood. This was accompanied by faintness and exhaustion, and was succeeded by evident signs of anæmia. The attacks of blood-stained mucus, which at first were restricted to the catamenial periods, became more frequent, and took place whenever the patient was enfeebled by fatigue or excitement. Pain after food, tenderness on pressure, and other signs of ulceration of the stomach were absent during the whole course of the illness. The bowels were constipated, and the stools contained a considerable quantity of mucus.

Various methods of treatment were adopted by the different physicians she consulted. Astringents of all kinds failed to allay the vomiting or lessen the amount of mucus and blood. Blisters and dry cupping

over the epigastrium were equally ineffectual; preparations of iron seem to increase the frequency as well as the severity of the attacks; purgatives afforded temporary relief, but I tried calomel in five-grain doses without any benefit. Eventually I recommended the external use of the dilute nitro-hydrochloric acid over the epigastric and hypochondriac regions. This produced an eruption of urticaria, and after it had been for some weeks employed the attacks of vomiting entirely disappeared. The bowels remained in a constipated state for some years, and the evacuations contained a considerable amount of mucus, but with this exception Miss B— regained a tolerable share of health and strength.

The dependence of the vomiting of mucus and blood upon uterine irritation was in this case well marked. It should, however, be observed that the stomach was not acting vicariously, so as to relieve an imperfect state of uterine congestion, for the catamenia continued throughout the whole illness profuse rather than diminished. Again, in the early stage mucus only was rejected, and it was not until some time had elapsed that the blood presented itself along with it.

There can be no doubt that many of the cases of obstinate diarrhœa that occur in young females may be referred to a similar cause. Thus, I have at present under my care a lady who suffered from hysterical paraplegia, which when cured was immediately succeeded by an almost constant state of diarrhœa.

Whatever hesitation practitioners may have in admitting that distant organs can injuriously affect the vasomotor nerves of the digestive canal, there can be no doubt that disorders of this part are exceedingly apt to influence the circulation of the blood in other structures. The most ordinary observation shows how constantly flushings of the cheek and ears and coldness and numbness of the extremities result from a disturbance of the functions of the stomach. We have, perhaps, paid too little attention to the various reflex consequences of disordered digestion, but the following cases seem to prove that they are not unworthy of careful investigation, and that the spinal cord itself may suffer injury during its transmission of sensations from the digestive tube when in a state of morbid excitement.

Case 35.—Mrs. M—, aged thirty-four, had been for many months subject to severe attacks of vomiting, which at first occurred only occasionally, but latterly had been almost constant. The fluid evacuated from the stomach consisted chiefly of mucus, she had no pain after food, no tenderness on pressure, the bowels were relaxed, and the most careful examination failed to discover any evidence of disease in the organs of the chest or abdomen. It had been surmised by an eminent physician whom she had consulted that she was in the habit of tippling, but this was indignantly denied both by the patient and her friends.

I prescribed frequent doses of calomel, and restricted

her entirely to milk, and under this treatment the vomiting quickly subsided.

She now began to complain of very severe pains shooting down the front of the legs and the feet, which increased at nights, and were only alleviated by constant rubbing. As the pains lessened numbness came on, and although she could move the limbs it was with considerable difficulty. She had, however, full power over the bladder and rectum, and she very gradually gained strength, and was in the course of a few months able to walk without assistance. Eventually she quite recovered.

Case 36.—A lady, nearly sixty years of age, had suffered for many months from attacks of spasmodic pain in the abdomen, which had latterly increased in severity and frequency. She had no vomiting, and the bowels, though confined, acted regularly. I could detect no physical signs indicating disease of any organ. A purgative electuary, along with a mild tonic, was prescribed, and the diet was carefully regulated. After about a week's treatment she passed a large quantity of hard fæces, and the abdominal pain immediately subsided.

In two or three weeks afterwards I was requested to visit her, as she had become delirious. The pulse was quick, there was no great heat of skin, and I was unable to discover any cause for the symptoms. After about a week she became gradually conscious, but now complained of intense pain of a shooting character affecting both the legs and feet. There was no loss of

motion or sensation, but the suffering was so intense, especially at nights, that her nurses were kept constantly rubbing the limbs, friction alone seeming to afford relief. In a few days the pains subsided, but stiffness of both limbs was now experienced, which increased, day by day, until all power of motion was lost. She remained under my observation for some weeks, but no improvement took place, and when I last heard of her there was complete paraplegia and loss of power over the bladder and rectum.

I can only call to mind three cases of this kind, but in all the symptoms and course of the disease were very similar. In one there was vomiting, that persisted for many months, in the second the attack seemed to be of the nature of colic, whilst in the third vomiting attended by delirium occurred only at the catamenial periods. None of the patients were at an age when hysteria is common, nor did they present any signs of that disorder. The first symptom referable to the spinal cord was, in each case, severe pains, evidently of a neuralgic character, shooting down both legs and feet. The pains were worst at nights, and were relieved by rubbing, so that in two patients that were under my immediate observation throughout the whole of their illness, the attendants were wearied with the incessant frictions that had to be maintained. Delirium preceded or followed the pains in two of the cases, but it was not of a violent character. In all, the pains gradually subsided within a week, but were directly followed by loss of motion and

of sensation, the bladder and rectum, however, retaining their powers in those that recovered. The pulse was in each instance rapid, but I have unfortunately no record of the temperatures. In the two favourable cases the power of motion very slowly returned, but complete paraplegia remained in the other patient.

A doubt naturally suggests itself, whether the digestive trouble was not the consequence of some mischief of the spinal cord, instead of the latter being the result of reflex action. I am inclined to think this was not the case, because there was no previous loss of motion or sensation, no feeling of constriction round the abdomen, no diminution in the power of the bladder or rectum, no previous injury or disease of the bones of the spine, in fact, nothing to give rise to a suspicion of a morbid state of the cord or its membranes. In addition to this, the spinal symptoms were in all suddenly ushered in with disturbance of sensation, accompanied, in two of the patients, by delirium, and the loss of motor power only occurred after the cessation of the pains.

I am inclined, therefore, to believe that the morbid action originated in the digestive organs, and was reflected from them to the spinal cord; but in the present obscurity in which so many of the affections of the nervous centres are involved, it will be wise to wait for further investigations before determining that such was certainly the case.

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